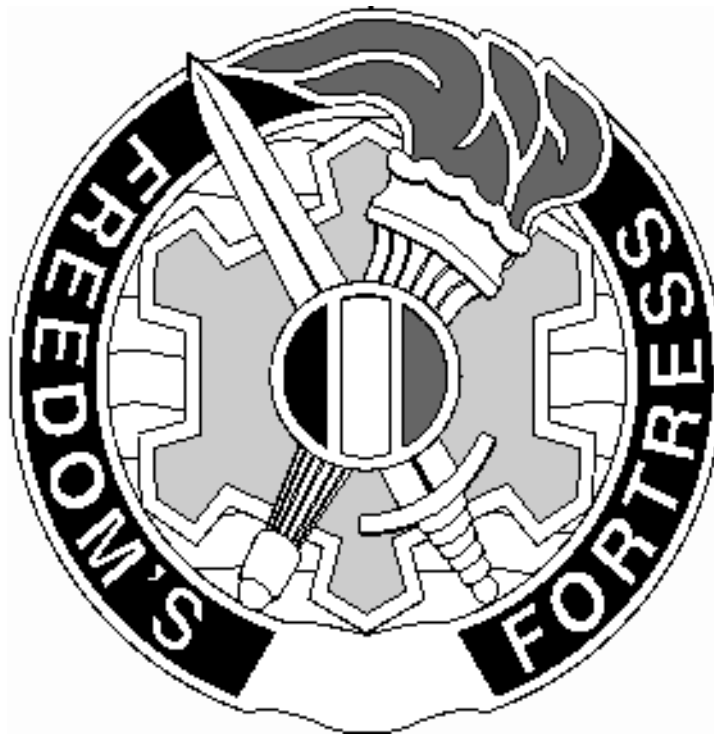


# TRADOC Quarterly Update

## 2nd Quarter, FY98

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This is a pivotal time for the Army and the Training and Doctrine Command. Momentous changes in the strategic landscape, changes in our nation, and changes to our force structure present challenges and opportunities for all of us to accomplish the missions required of the U.S. Army. The business of TRADOC is to meet these challenges by identifying, developing, and fielding capabilities which are the right combinations of Doctrine, Training, Leader Development, Organizations, and Materiel to support our Soldiers. Following are some of the Army/TRADOC initiatives that will impact on the Army, our soldiers, and organizations in the not too distant future.

**GENERAL WILLIAM W. HARTZOG**  
**COMMANDER**  
**U. S. Army Training and Doctrine Command**

# DOCTRINE

*Doctrine lies at the heart of a military force's professional competence. It is the authoritative guide to how forces fight wars and conduct operations other than war. Never static, always dynamic, doctrine is firmly rooted in the realities of current capabilities. At the same time, it reaches out with a measure of confidence to the future. Doctrine captures the lessons of past wars, reflects the nature of war and conflict in its own time, and anticipates the intellectual and technological developments that will bring victory now and in the future.*

The Joint and Army Doctrine Director is COL Michael L. Smith. He can be reached at DSN 680-3153/3951 or email: smithm@monroe.army.mil. Your questions or comments are truly welcome.

## Army Doctrine

### Army Doctrine XXI (ADXXI):

The Joint and Army Doctrine Directorate (JADD) is pursuing a series of initiatives to develop and implement a doctrinal system tailored to meet the needs of the Army in the 21st Century. The overall AD XXI concept recognizes the increasingly Joint, Inter-agency, and Multinational nature of military operations and the need to exploit information technologies and automation to enhance effectiveness, improve efficiency, and reduce costs in the development, production, distribution, and use of Army doctrine.

Specific proposals included in this concept were presented to the CG, TRADOC in November 1997. The primary recommendations were to endorse the idea of linking Army doctrine to Joint doctrine by revising the Army doctrine numbering system to be compatible with Joint doctrine and revising the doctrine hierarchy in a similar fashion. This proposal has been favorably reviewed by all of TRADOC schools and centers and the entire field Army. The proposal is undergoing additional study prior to a final decision.

Since the November information briefing to the CG, TRADOC, JADD has refined the initiatives of ADXXI to include institutionalizing a Reserve Component Outreach Program. This initiative recognizes that future US military operations will draw extensively on the capabilities found in the US Army's reserve components (USAR and ARNG). Moreover, there is a broadly accepted sensing that the myriad changes in US Army doctrine, ADXXI-related refinements, and several other factors require the active participation

of and close coordination with the US Army's reserve components. Hence, the purpose of this program is to expand the current role of US Army's reserve component in Army doctrine development. (POC, LTC Goodwin, DSN 680-3560, email goodwinm@monroe.army.mil)

### FM 100-5, Operations:

The 1998 edition of FM 100-5 will be the fourteenth in a series that began in 1905 and it will be the second edition published since the end of the Cold War. The 1998 edition will express our best understanding of how to wage all manners of operations today and tomorrow. It will reflect the lessons of nearly a decade of post-cold war experience, assessments of technological advancements, sound theory, and an appreciation of proven fundamentals and principles. It will address the full range of operations the U.S. Army expects to execute in the foreseeable future—offense, defense, stability, and support. It confirms that the nation will, as it has for 200 years, call on the Army to conduct a wide array of operations beyond the scope of all-out war. In October 97 United States Army Combined Arms Command (CAC) completed initial Army wide staffing of the final draft of the 1998 edition of FM 100-5. As a result of comments received during the staffing structural changes were made to the final draft and a revised final draft was developed and staffed Army-wide in February 1998. Upon completion of this review, the manual will undergo a Doctrinal Review and Approval Group (DRAG) conference scheduled for May 1998. The TRADOC Commander GEN Hartzog will chair the DRAG. It is anticipated that the 1998 edition of FM 100-5 will be published during the 3rd quarter FY98. Additional information on the new FM 100-5 is available on the CAC Internet Homepage address: <http://www-cgsc.army.mil/cdd/f465/f465.htm>. (POC, LTC Gaines, DSN 680-4225, email gainesk@monroe.army.mil)

### FM 22-100, Army Leadership:

The Chief of Staff of the Army tasked the Combined Arms Center, TRADOC to update this leadership doctrine. The revision will provide leadership doctrine for all military and civilian Army leaders during joint, interagency, and multinational operations. Its purpose is threefold:

To provide a unified theory of leadership for America's Army (both active and reserve) composed of commissioned officers, warrant officers, noncommissioned officers, soldiers, and civilians.

To provide doctrine that enables leaders to meet mission requirements during times of peace or during any of the doctrinal types of operations: offensive, defensive, stability, or support.

To provide a comprehensive and adaptable manual for the twenty first century.

This revised manual is for all military and civilian leaders in the Army. There are some aspects of leadership that apply to everyone, regardless of rank or whether or not the person wears a uniform. The first part of the manual applies to all Army leaders and captures those common aspects of leadership. On the other hand, leadership in some ways is not the same for the sergeant as it is for the colonel. Consequently, the next three parts address the unique aspects of leadership that exist at the specific levels of leadership; direct, organizational, and strategic. This revision includes several features, among them: a description of the leadership process, a description of the Army leader of the twenty first century, a clarification of the skills and actions that differ in kind vice by type, by level of leadership, and a discussion of leader development responsibilities that will enable the Army to continue to improve to meet future challenges.

This manual Supersedes five field manuals and one DA Pamphlet:

FM 22-9 Soldier Performance in Continuous Operations

FM 22-100 Military Leadership.

FM 22-101 Leadership Counseling

FM 22-102 Soldier Team Development

FM 22-103 Leadership & Command at Senior Levels.

DA Pam 600-80 Executive Leadership.

Ultimately, this revised leadership doctrine will drive future leadership and leader development initiatives associated with the three pillars of the Army's leader development model (DA Pam 350-58). Therefore, this manual will serve as—

The basis for leadership assessment.

The basis for leadership counseling and development.

The basis for leadership evaluation, to include the Officer Evaluation Report (OER).

A point of departure for development and implementation of leadership tactics, techniques, and procedures (TTPs) in operational assignments.

A guide for TRADOC schools during institutional instruction.

A springboard for an individual leader's self-development initiatives.

The manual is scheduled for publication 3rd QTR FY 98. (POC. Mr. Rinaldo, DSN 680-2965, email: rinaldor@monroe.army.mil)

## **FM 100-6 Information Operations:**

As the Army's new capstone publication for Information Operations (IO), this manual supports the National Military Strategy (NMS) and explains the fundamentals of information operations for the Army. Information Operations doctrine reflects, and goes beyond, the joint military strategy of Command and Control Warfare (C2W), which implements Department of Defense (DOD) and Information Warfare policy. Information Operations identifies information as a major influence on operations at the tactical, operational, and strategic levels. It enables commanders to successfully integrate information, information systems, and their effects across the full range of military operations. Such integration enables and enhances the elements of combat power. Synergy is created which contributes to increased lethality, survivability and tempo in combat as well as highly credible capable forces in operations other than war. Moreover, IO doctrine addresses the framework that will enable the commander to use all available information, protect the ability to sense, process, integrate, decide, act on, and manage that information, as well as, exploit and deny the adversary's ability to do the same. This manual facilitates the transition of the total U.S. Army to the Information Age. (Published Aug 96) (Interim POC, MAJ Pribilski, DSN680-3444, email pribilsr@monroe.army.mil)

## **FM 100-8, The Army in Multinational Operations:**

The Army's capstone manual for conducting multinational operations. This manual addresses multinational command and leadership considerations, discusses factors affecting planning, describes possible coalition/alliance command structures, and functional considerations for the commander at the operational and tactical level. It includes host nation support and a guide for coalition operations. Published Nov 97. Distributed to the field Jan –Feb 98 timeframe. (POC, LTC Hultman, DSN 680-3658, email hultmanj@monroe.army.mil)

## **FM 100-10, Combat Service Support (CSS):**

This is the capstone CSS manual that depicts the Army CSS organizations and describes how they support commanders at all echelons by integrating supply, transportation, maintenance, health services, personnel support, and field services. It provides the basis for subordinate CSS doctrine, materiel, training, and organizational development. (Published Oct 95.) (POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-12, Army Theater Missile Defense (TMD) Operations:**

This manual will describe roles, responsibilities, requirements and functions for each of the operational elements of TMD. This manual also integrates lessons learned and insights derived from Theater Missile Defense Advanced Warfighting Experiments (AWE) conducted during Exercises Roving Sands 95,96 and 97. FM 100-12 will address the threat, active defense, passive defense, attack operations and C4I. Emphasis will also be given to integration of Army TMD efforts throughout the theater, providing for a robust theater-level command and control structure. (To be published 1st Qtr FY 99.) (POC, MAJ Karaktin, DSN 3439, email karatiw@monroe.army.mil)

#### **FM 100-14, Risk Management:**

This manual will explain the principles, procedures and responsibilities to successfully apply the risk management assessment process to conserve combat power and resources. The manual describes the five steps of risk management which include Identifying hazards, Assessing Hazards to Determine Risks, Develop Controls and make Risk Decisions, Implement Controls, and Supervise and Evaluate. The manual also illustrates how to apply each step to military operations through the factors of METT-T. The manual is intended to assist commanders and staffs develop a framework which makes risk management a routine part of planning, preparing and executing operational missions and everyday tasks. (To be published 3rd Qtr FY 98.) POC, MAJ Burch, DSN680-2888, email burcho@monroe.army.mil)

#### **FM 100-15, Corps Operations:**

The new FM 100-15 succinctly aligns Corps and Army-level doctrine. The central focus of the manual will be warfighting. The manual also addresses force projection operations and the structure of the battlefield and battle command of the corps. Finally, it delineates battlefield responsibilities in the joint environment, to include operations as a JTF/ARFOR headquarters. Latest revision to this manual was done August 1997. (POC,LTC Gaines, DSN680-4225, gainesk@monroe.army.mil)

#### **FM 100-16, Army Operational Support:**

This manual addresses operational-level logistics and support functions - CONUS through theater-level. It specifically addresses the operational commander's vision of support; keys to operational support; theater organization and structure, operational-level CSS functions; operational-level support functions, force protection and rear operations. FM 100-16 also reflects the current Army focus on contingency operations and force projection. (Published May 96.)

POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-17, Mobilization, Deployment, Redeployment, and Demobilization (MDRD):**

FM 100-17 is a guide for Army commanders and planners involved in MDRD. It describes the process used to MDRD Army elements through the use of required assets (forces/units, manpower/individuals, facilities, and logistics). The manual also introduces the reception, staging, onward movement, and integration (RSO&I) process. FM 100-17 is currently under revision. FM 100-17 will serve as the overarching document for a series of FM 100-17 manuals; FM 100-17-1, Army Pre-positioned Afloat Operations; FM 100-17-2, Army Pre-positioned Ashore Operations; FM 100-17-3, RSO&I; FM 100-17-4, Deployment; and FM 100-17-5, Redeployment. Publication of FM 100-17 is postponed pending completion of the FM 100-17 series of manuals to ensure it contains the proper hooks and links. Proponency for the manual has been transferred to CASCOM. (POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-17-1, Army Pre-positioned Afloat (APA) Operations:**

In March 1993, it was determined the only way the military could increase its deployability was to expand its investment in three areas of the Army Strategic Mobility Program triad: sealift, airlift, and afloat pre-positioning. This manual establishes the doctrinal framework for one portion of that triad, Army War Reserve-3, APA. APA is the expanded reserve of equipment for an armor brigade, theater-opening CS/CSS units, port-opening capabilities, and sustainment stocks aboard forward deployed pre-positioned afloat ships. This manual describes APA operations to include missions, capabilities, command relationships, communications, and security. It discusses the organization, responsibilities, and command relationships ranging from the National Command Authorities, Joint Chiefs of Staff, Combatant Commander (CINC), to the Brigade Commander performing the APA mission. (Published Jul 96.) (POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-17-2, Army Pre-positioned Land:**

This publication has undergone two staffing processes and comments have been incorporated into a final draft. Publication and distribution to the field is expected 2nd Qtr 98. (POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-17-4, Deployment:**

Publication covering deployment from fort to foxhole. The final draft has been completed and publication of

the manual is expected during the 2nd Qtr 98. The publication is contracted to MPRI for development. (POC, Mr. Wightman, DSN 680-3089, email wightmar@monroe.army.mil)

#### **FM 100-18, Space Support To Army Operations:**

The Army's capstone manual on how to use space system capabilities to enhance mission accomplishment across the full range of military operations. It emphasizes enhancements offered by space systems in communications; reconnaissance, intelligence, surveillance, and target acquisition (RISTA); weather, terrain, and environmental monitoring, position and navigation; and missile warning. This manual provides a foundation for leader development, training, and space-related modernization initiatives that support the Force XXI Army's missions and provides soldiers with a decisive advantage worldwide. It is relevant from the highest levels of command to the soldier in the foxhole. (Published Jul 95.) (POC, MAJ Karaktin, DSN 680-3489, email karaktiw@monroe.army.mil)

#### **FM 100-19, Domestic Support Operations:**

Describes Army assistance to U.S. civil authorities. It includes mandated and legislated requirements and considerations and principles for command and staff planning and execution. FM 100-19 incorporates lessons learned from numerous operations with emphasis on the interagency nature of these operations (Published Jul 93.) (POC, Mr. Rinaldo, DSN 680-2965, email rinaldor@monroe.army.mil)

#### **FM 100-20, Stability Operations and Support Operations:**

This is a draft capstone manual that provides the basis for Army support to various national policy options in Stability Operations and Support Operations. It provides leaders with a basic concept of the political-military environments in which these operations are conducted and the nature of national goals and objectives desired. It is the starting point for development of plans and orders. Previously published as Military Operations in Low Intensity Conflict, the draft version of this manual is on hold pending the publication of the 1998 version of FM 100-5, Operations, which as currently written, will drive some significant changes to this draft. (To be published subsequent to FM 100-5). (POC, Mr. Rinaldo, DSN 680-2965, email rinaldor@monroe.army.mil)

#### **FM 100-25, Army SOF Operations:**

This manual capstone manual for Army SOF doctrine describes the operational capabilities and fundamental principles of the U.S. Army Special Operations Forces (ARSOF). It provides the authori-

tative basis for the subsequent development of special operations (SOF) doctrine, training, capabilities, and equipment. Its intent is to give commanders a framework for the proper employment of SOF. Risk management will be incorporated into the final draft prior to publishing. The manual in final coordination. Proponent is requesting a Level III DRAG. (To be published 2nd Qtr 98) (POC, LTC Wallace, DSN, 680-3892, email wallaces@monroe.army.mil)

#### **FM 100-23, Peace Operations:**

Provides guidance to commanders for conducting the full range of missions in support of international peacekeeping and peace enforcement efforts. This manual addresses the special requirements of these operations, to include planning, force tailoring, command, control, coordination, liaison, logistics and intelligence. It also reviews the unique operational environment of peace operations, including United Nations and non-United Nations' operations, as well as the requirements for operations in the interagency arena and with multinational forces and non-governmental organizations. It applies the principles and tenets of Army operations to peace operations and examines the variables of consent, use of force, and impartiality. (Published Dec 94.) (POC, Mr. Rinaldo, DSN 680-2965, email rinaldor@monroe.army.mil)

#### **FM 100-40, Tactics:**

FM 100-40 is under development by the Corps and Division Doctrine Directorate, Combined Arms Center, Ft. Leavenworth, Kansas. The intent is to develop a pub that will unify tactical principles across the spectrum of Army operations from peace to conflict to war. It will apply at all levels of the Army from company to theater army. The pub is being developed concurrently with FM 100-5, "Operations" and is intended to reflect emerging doctrinal concepts that will solidify with approval of FM 100-5. A first draft has undergone staffing and review and is currently being revised at CAC. (POC, LTC Gregory, DSN 680-3454, email gregoryr@monroe.army.mil)

#### **FM 71-100, Division Operations:**

FM 71-100, Division Operations: This manual addresses tactical operations of the division in war. Focus is on division deployments and warfighting. An initial draft is under development with projected staffing during the 2nd Qtr FY 98. It applies the concepts addressed in the 1998 final draft version of FM 100-5, "Operations", to division operations. The revised FM 71-100 will contain the tactics, techniques and procedures of FM 71-100-1, Armored and Mechanized Division Operations; FM 71-100-2, Infantry Division Operations; and FM 71-100-3, Air Assault Division Operations. The anticipated

publication date for the manual is 1st Qtr FY 99. (POC, LTC Gaines, DSN 680-4225, email gainesk@monroe.army.mil)

#### **Army Universal Task List (AUTL):**

The Army Universal Task List (AUTL), is a comprehensive, hierarchical listing of strategic, operational, and tactical level of war functions. The AUTL will serve as the Army's tactical level tasks of the Universal Joint Task List. The pamphlet applies to the Active Army, the U.S. Army Reserve, and the National Guard by providing a standard set of functions, their definitions, and reference codes to identify what the Army does on or in the support of the battlefield at each of the three levels of war. The AUTL has undergone extensive staffing and review by the Army and will be published as a Department of the Army Pamphlet. Future updates will include the development and incorporation of Measures of Performance for each task. The anticipated publication date for the manual is 3rd Qtr FY 98. (POC, LTC Gaines, DSN 680-4225, email gainesk@monroe.army.mil)

#### **TR Reg 25-32, TRADOC Doctrinal Literature Program (TDLP):**

This regulation establishes policy and assigns responsibility for writing, coordinating, integrating, reviewing, and approving doctrinal literature. It applies to TRADOC and non-TRADOC preparing agencies responsible for doctrine development and production. It provides a common framework from which doctrine writers Army-wide are able to work together toward translating concepts and establishing consensus on the "body of thought" that is doctrine. (POC, MS Dunn, DSN 680-4316, email dunne@monroe.army.mil)

## **Joint Doctrine Publications Update**

#### **JP 3-0, Doctrine for Joint Operations:**

TRADOC has written 12 joint publications that the joint staff has approved and published. The most significant of those is JP 3-0. It is the joint equivalent of FM 100-5 Operations and affects most other important pubs in the joint system. (Published Sep 1993). (POC COL Smith DSN 680-3153 email: smithm@monroe.army.mil)

#### **JP 3-07, Joint Doctrine for Military Operations Other Than War:**

Expands the discussions in JP 3-0 of the principles and considerations associated with joint operations below the level of large scale, sustained combat operations. The publication describes many of the operations and provides examples of the principles of MOOTW in action. (POC Mr. Rinaldo DSN 680-2965 email: rinaldor@monroe.army.mil)

#### **JP 3-07.3, JTTP for Peace Operations:**

Expands the work done in the previously approved JP 3-07.3, JTTP for Peacekeeping Operations, in order to include Peace Enforcement. The Preliminary Coordination Draft of this publication may be found in the draft joint doctrine section of the joint doctrine website at [HTTP://WWW.DTIC.MIL/DOCTRINE](http://WWW.DTIC.MIL/DOCTRINE). (POC Mr. Rinaldo DSN 680-2965 email: rinaldor@monroe.army.mil)

#### **JP 3-07.6 JTTP for Foreign Humanitarian Assistance:**

Provides tactics, techniques, and procedures to be used by joint forces in conducting foreign humanitarian assistance operations. Describes interface and coordination required between the joint task force and other governmental agencies (OGA), non-governmental organizations (NGOs), private voluntary organizations (PVOs) and international organizations (IOs) likely to be operating in such areas. Consequence Management was incorporated into the publication and it is at the joint staff for final coordination. The Final Coordinating Draft of this publication, may be found in the draft joint doctrine section of the joint doctrine website. (POC LTC Wallace DSN 680-3892 email: wallaces@monroe.army.mil)

#### **JP 3-07.7 JTTP for Domestic Support Operations:**

Provides procedures to be used by joint forces in conducting support within the continental US, Alaska and Hawaii, and US territories and possessions. Applies to major categories of Military Support to Civil Authorities (MSCA) and Military Support to Law Enforcement Agencies (MSLEA). The Preliminary Coordinating Draft of this publication, may be found in the draft joint doctrine section of the joint doctrine website. (POC Mr. Rinaldo DSN 680-2965 email: rinaldor@monroe.army.mil)

#### **JP 3-09, Doctrine for Joint Fire Support:**

JP 3-09 clarifies relationships and responsibilities for those fires that assist land and amphibious forces to maneuver and control territory, populations, and key waters. Included are discussions on issues such as FSCL, Joint Targeting Coordination Board (JTCB), and relationships between air, land, and sea components. JP 3-09 supports a series of pubs such as JP 3-09.1, JTTP for Laser Target Designation Operations and JP 3-09.3, JTTP for Joint CAS. The publication has been through several final coordination drafts and Tank sessions. The Joint Staff is attempting to resolve differences between the Army and the Air Force. (POC LTC Floyd DSN 680-2778 email: floydb@monroe.army.mil)

**JP 3-09.1, JTTP for Laser Target Designation Operations:**

This publication provides planners and users with information on laser designators, acquisition devices, and laser-guided munitions. It describes laser planning and coordination procedures and laser system capabilities and operations. The publication also provides guidance regarding safety considerations, general information on laser codes, and reference information. The Preliminary Coordinating Draft of JP 3-09.1 is scheduled for fielding during the 3rd Quarter FY 98. (POC LTC Floyd DSN 680-2778 email: floydb@monroe.army.mil)

**JP 3-13, Joint Doctrine for Information Operations:**

Originally started as "Joint Doctrine for Information Warfare", the pub was renamed after the DOD Directive 3600.00 (S) was published as Information Operations. This publication will provide the overarching doctrinal guidance for Information Operation in joint operations. It will provide a common conceptual framework for offensive and defensive activities, and use of information in military operations. This publication is currently under development by the J38. A Final Coordination Draft of the manual is scheduled for distribution to Services and CINCs in February 1998. Projected Publication is in May 1998. (POC MAJ(P) Burch DSN 680-2888 email to: burcho@monroe.army.mil)

**JP 3-15, Joint Doctrine for Barriers, Obstacles, and Mine Warfare:**

Provides barrier, obstacle, and mine warfare guidelines for the planning and execution of theater strategy, campaigns and joint operations during peacetime or combat operations. Describes command and control, employment and countering enemy employment. Final coordinating draft staffing has been completed. Based upon the results of this staffing effort, another final coordinating draft is currently anticipated and should be staffed in the 2nd Qtr FY 98. (POC LTC Hultman DSN 680-3658 email: hultmanj@monroe.army.mil)

**JP 3-16, Joint Doctrine for Multinational Operations:**

Sets forth doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations and provides the doctrinal basis for US military involvement in Multinational and interagency operations. Provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine for joint operations and training. Review of Final Coordinating Draft was done in January 98. (POC LTC Hultman DSN 680-3658 email: hultmanj@monroe.army.mil)

**JP 3-18, Joint Doctrine for Forcible Entry Operations:**

Provides guidance concerning joint forcible entry operations. This publication addresses forcible entry principles associated with command and control, planning, execution, and support, as well as the interface between airborne, special operations forces, and naval expeditionary forces (amphibious forces). A revision of the proposed final pub (based upon Joint Staff comments) has been done by ALSA. The completed revision was submitted to the Department of the Army in July 1996. The Joint Staff is currently reviewing the publication. (POC LTC Wallace DSN 680-3892 email: wallaces@monroe.army.mil)

**JP 3-18.1, Joint Airborne and Air Assault Operations:**

Provides guidance on employment of airborne and air assault forces. This publication integrates Service doctrine into a single source publication that addresses principles of command and control, planning, execution, and support requirements involving airborne and air assault operations. This document was restaffed with the 82nd Airborne Division and the 101st Air Assault Division. Draft publication is currently on hold subject to a USTRANSCOM proposal to combine the publication with JPs' 3-17, "JTTP for Theater Airlift Operations" and 4-01.1, "JTTP for Airlift Support to Joint Operations." The proposal is to be briefed during the April 98 Joint doctrine Working Party. (POC LTC Watkins DSN 680-4134 email: watkinsd@monroe.army.mil)

**JP 3-34, Engineer Doctrine for Joint Operations:**

This publication was approved for development by the 22-23 October 96 JDWP. The Army has been assigned as the Lead Agent and TRADOC as the Primary Review Authority. The JS J4 is the Joint Doctrine Sponsor. The scope of this publication is to provide Joint Force Commanders and their staffs with current engineer doctrine, across the range of operations from MOOTW to general war. First draft of this publication was distributed for worldwide review 24 November 97. Second Draft is scheduled for distribution end of April 98. (POC LTC Wallace DSN 680-3892 email: wallaces@monroe.army.mil)

**JP 3-56, Command and Control Doctrine for Joint Operations:**

This publication provides overarching guidance on the application of joint force command and control principles in joint operations. This will include information management processes, systems support, and organizational principles. The pub was assigned



to HQ TRADOC for re-write on 26 Jan 96. The draft has been developed through a process of literature research, interviews with senior joint staff officers (flag level) and collaboration with an expert writing team from the Armed Forces Staff College. A draft has been reviewed and is currently being revised to reflect recommended changes. It will undergo professional editing followed by a formal work group that will resolve any remaining issues prior to submission to the lead agent. (POC LTC Gregory DSN 680-3454 email: gregoryr@monroe.army.mil)

#### **JP 3-60, Doctrine for Joint Targeting:**

This publication provides doctrinal guidance for joint targeting across the range of military operations, including TTP for selection, coordination, deconfliction, and synchronizing the attack of time-sensitive targets. The Air Force Doctrine Center is currently developing the second draft. (POC LTC Floyd DSN 680-2778 email: floydb@monroe.army.mil)

#### **JP 4-01.4, Joint Tactics, Techniques, and Procedures for Theater Distribution:**

The Joint Doctrine Working Party held 23-24 Oct 96 at the Joint Warfighting Center recommended the Army be designated as the lead agent for development of this publication. CASCOT is actually writing the pub; the first draft completed Aug 97. Coordinating draft due June 98 with CJCS approval expected in October 98. This publication will provide the joint force commander, component commanders, and their staffs with current joint tactics, techniques, and procedures for theater distribution. (POC Mr. Wightman DSN 680-3089 email: wightmar@monroe.army.mil)

#### **JP 4-01.8, Joint Tactics, Techniques, and Procedures for Joint Reception, Staging, Onward Movement, and Integration:**

The Joint Doctrine Working Party held 16-17 April 1996 at the Joint Warfighting Center recommended the Army be designated as the lead agent for developing this publication. The pub will provide guidance and outline procedures for the reception, staging, onward movement and integration of forces during joint operations. The program directive was approved in late June 96. Publication is scheduled for 3rd Qtr, FY 98. The publication was reviewed during the 17-20 November 97 Joint Doctrine Synchronization Working Group Meeting. (POC Mr. Wightman DSN 680-3089 email: wightmar@monroe.army.mil)

#### **JP 4-07, Joint Tactics, Techniques, and Procedures for Common User Logistics During Joint Operations:**

The Joint Doctrine Working Party held 24-25 Oct 95 at the Joint Warfighting Center recommended the Army be designated as the lead agent for developing this publication. This joint publication will standardize guidance across logistics functional areas and provide a single source publication for conducting common user logistics operations within a theater and a joint task force. The program directive for this publication was approved and signed 16 Jun 97. Publication is scheduled for 1st Qtr, FY 00. (POC Mr. Wightman DSN 680-3089 email: wightman@monroe.army.mil)

#### **JP 5-00.1, Doctrine for Campaign Planning:**

Provides fundamental doctrinal principles for the planning of theater and subordinate campaigns. Expands on guidance currently found in JP 3-0, "Doctrine for Joint Operations" and JP 5-0, "Doctrine for Planning Joint Operations". It focuses on the application of operational art, elements of design and the integration of strategic and operational functions. The pub currently undergoing revisions directed by the joint staff intended to clarify introductory principle, more closely integrate the elements of design with the campaign model, and expand the discussion of subordinate campaign planning. (POC LTC Gregory DSN 680-3454 email: gregoryr@monroe.army.mil)

#### **Consequence Management.**

The 1-2 April 1997 Joint Doctrine Working Party agreed to introduce consequence management into Draft Joint Pub 3-07.6, "Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance" based on a proposal by US Pacific Command (PACOM). PACOM generated its proposal based on exercise Ellipse Charlie in 1996 and other developments involving consequence management. Draft Joint Pub 3-07.7, "Joint Tactics, Techniques, and Procedures for Domestic Support Operations" addressed consequence management and crisis management, and the PACOM proposal suggested that the material in Joint Pub 3-07.6 build on the treatment in Joint Pub 3-07.7. A proposed new definition of consequence management follows:

Comprises essential interagency services and activities required to manage and mitigate damage, loss, hardship, or suffering resulting from disasters and catastrophes, either manmade or natural. It includes those measures necessary to restore essential government services, protect public health and safety, and provide emergency relief to government, businesses, and individuals affected by life-threatening or

destructive events. Such services and activities may include population evacuation, decontamination, transportation, communications, public works and engineering, firefighting, information and planning, mass care, resource support, health and medical services, urban search and rescue, hazardous materials, food, and energy.

Presidential Decision Directive (PDD) 39, "US Policy on Counterterrorism," promulgated in June 1995 and "The Defense Against Weapons of Mass Destruction Act of 1996," also known as the Nunn-Lugar-Domenici Amendment, added emphasis to consequence management. PDD 39 addresses responsibilities in the Continental United States (CONUS) and other than CONUS. The lead domestic agency, the Federal Emergency Management Agency, followed up with publication of a "Terrorism Incident Annex to the Federal Response Plan" (FRP) in February 1997. DOD promulgated its Department of Defense Directive (DODD) 3025-15, "Military Assistance to Civil Authorities," which discusses consequence management, at the same time. Additionally a Chairman Joint Chiefs of Staff Instruction (CJCSI) is in preparation to address DOD support to consequence management operations OCONUS. With the recent publication of, "The Report of the National Defense Panel" and DOD's Report to Congress, "Proliferation: Threat and Response" as well as a variety of recent exercises like Azure Haze and Agile Lion 97, the topic continues to surface. POC is Mr. Richard Rinaldo, DSN 680-2965, email [rinaldor@monroe.army.mil](mailto:rinaldor@monroe.army.mil)

#### **Joint Vision 2010:**

JADD remains engaged in implementation of joint Vision 2010 in coordinating with the Deputy Chief of Staff for Combat developments of HQ TRADOC and Department of the Army. This effort includes participation in workgroups and conceiving and compiling comments and recommendations for developing desired operational capabilities as well as participation in development of departmental input to the joint Vision 2010 Implementation Plan. POC is Mr. Richard Rinaldo, DSN 680-2965, email [rinaldor@monroe.army.mil](mailto:rinaldor@monroe.army.mil)

#### **The Joint and Army Doctrine Directorate Quarterly Project Update Program:**

The JADD Quarterly Project Update Conferences are conducted to update the "Tidewater" joint doctrine community, Allied Liaison Officers, and defense contractors on projects and actions of general interest that are being worked by JADD. They are also a forum for discussion of key doctrinal issues. This series of conferences has been highly informative and

well attended. During 1997 JADD began hosting the Semi-Annual Army Doctrine Conference (SAADC). Attendees included many of the same people normally attending the Quarterly Project Update Conferences. As a result, in 1998 there will be two QPUCs conducted 6 March and 14 August 1998. They will alternate with the SAADCs. This will provide for more efficient use of resources and impact less on time management for invitees. POC is LTC Gregory DSN 680-3454, email [gregoryr@monroe.army.mil](mailto:gregoryr@monroe.army.mil)

#### **The Joint and Army Doctrine Directorate Liaison Program:**

The JADD Liaison Program was created to enhance information exchange with agencies interested in joint doctrine-especially the staffs of the warfighting CINCs. The JDD has formalized liaison activities with the following organizations:

- US Atlantic Command
  - US Central Command
  - US European Command
  - US Pacific Command
  - US Space Command
  - US Strategic Command
  - US Transportation Command
  - US Forces Korea
  - Joint Warfighting Center
  - Air Force Doctrine Center
  - Naval Doctrine Command
  - Marine Corps Combat Development Command
  - Air Land Sea Application Center
  - US Coast Guard Doctrine Team
  - Joint Special Operations Forces Institute
  - Joint Targeting School
  - Battle Command and Training Program-Operations Group Delta
  - MCCDC/MAGTF Staff Training Program
  - CGSC, Fort Leavenworth KS
  - TRADOC Schools
  - Combined Arms Center (CAC) Corps and Division Doctrine Directorate
  - Aviation Logistics School
  - Soldier Support Institute
  - US Army Material Command
  - Armed Forces Staff College
- (POC LTC Wallace DSN 680-3892 email: [wallaces@monroe.army.mil](mailto:wallaces@monroe.army.mil))

### **Joint Warfighters (JWF) Joint Test and Evaluation (JT&E) Joint Feasibility Study (JFS):**

JWF was chartered in June 97. They are currently preparing the Program Test Plan (PTP). They are building up to 68 personnel with a mix of active duty from each Service and contractors. Recommendations to training, organization, material, and C4I systems as well as possible recommendations to doctrine and TTPs may all be outcomes of the JT&E. The JWF will be conducted over a three year period. (POC LTC Floyd DSN 680-2778 email: floydb@monroe.army.mil)

### **AJP-01 "Allied Joint Doctrine:**

Provides 'capstone' doctrine for the planning, execution and support of allied joint operations. Although intended primarily for NATO forces, the doctrine could be applied, with adaptations agreed to by participating nations, for operations outside NATO within the framework of a Combined Joint Task Force (CJTF). The publication describes the fundamental aspects of, and addresses the principal functions and activities related to joint operations including a range of MOOTW. While primarily focused for use by commanders and staffs at the operational level of war, it may also be used as a reference for planning/executing operations at all levels. Its predecessor, AJP-1 (A) "Allied Joint Operations Doctrine," was originally ratified by nations in Jun 97. This version was staffed for ratification by the nations to change the number and title of the publication in order to conform to the new Allied hierarchy of publications system adopted by NATO in Sep 97 and to incorporate refinements identified since the last ratification staffing. (POC LTC Hultman DSN 680-3658 email:hultmanj@monroe.army.mil)

## **Army After Next**

### **Futures Directorate**

The single focus of the Future Battle Directorate during 2nd Quarter FY98 has been the CSA's Army After Next (AAN) Program.

### **AAN Program Accomplishments and Milestone for 2nd Quarter 98:**

Second quarter FY98 saw a range of significant accomplishments that support FY 98 study and research objectives.

1. Authored or co-authored five articles for the March/April issue of Military Review. The focus of the issue will be Army After Next. Each of the articles is intended to focus on a different aspect of the project's study and research efforts. The principal article, co-authored by the CSA and CG, TRADOC, is

about change and the process of changing an army. Additionally, BG Buckley and LTC Echevarria's co-authored an article that discusses AAN and strategic preemption; Maj. Biever and BG (r) Wass de Czege's article is aimed toward human and organizational issues for future Army operations; BG Buckley, Dr. Milton, and LTC Franke talk about Technology's impact on the future Army; and last, Col. House talks about his lessons learned as the Red Force commander in tactical wargames against AAN era forces. The issue is expected to be in print in May.

2. Participated in the Fires IIT Colonel-Level Panel, 26 Jan. This meeting was to schedule to finalize and approve of Fires IIT concept and methodology within TRADOC, the Field Artillery School, Army Materiel Command (AMC), Army Research Laboratory (ARL), and SARDA. The IIT concept provides a process and methodology for the S&T community and the AAN user community to collaborate and assess current AAN concepts and notional systems. The IIT will describe alternate concepts, capabilities, and notional systems in support of AAN-era operations and identify and prioritize key enabling technologies associated with concepts. Areas of assessment include: military utility, technological feasibility, affordability, impact on logistics and potential adversary counters and asymmetric responses. Four working groups were identified for the Fires IIT (Physical, Effectors, Sensors, C4I).

3. FBD, DCSDOC continues to sponsor and participate in an Army Science Board Study entitled "Human Behavior in Combat. The issue group began meeting in May 1997 and has thus far visited IDA, ARI, TRAC-Leavenworth, National Simulation Center, ARL, NTC, and WRAIR. Findings and recommendations will be presented to CG, TRADOC in May 1998.

4. Participated in the USMC/RMA sponsored Urban Warfare Workshop in McLean, Virginia, 29 and 30 Jan. The purpose of the workshop was to create a draft concept of urban operations that is applicable within the new and emerging strategic setting and across the broad range of operational conditions. This effort is complimentary to the AAN Urban Warfare Project.

5. Participated in the USAF Aerospace Future Capabilities Workshop, 15 Jan, in McLean, Va. This was the second of five planned workshops focused on developing a baseline force structure for the year 2020 for the Air Force's Aerospace Future Capabilities Wargame, 18 – 22 May. The objective of the wargame is to create a strategic context for the USAF's investment strategy for the future.

6. Participated in Space Game II at Colorado Springs, 28 Jan – 6 Feb. The objective of this effort,

sponsored by Army Space Command, was to provide insight to assist in the development of a vision of future space warfare, and thus the role of space in land warfare in 2020 and beyond. Post game analysis will be accomplished through a Senior Seminar and subsequent analysis which will be published in an emerging impressions report and a final report.

7. Participated in Defense Science Board Task Force on Coalition Warfare. The seminar entitled, "JV2010/AAN Implications for Coalition Operations", held at Carlisle 19 – 20 Feb, and was designed to prepare AWC International fellows for their presentation to the DSB. Major focus was on technical compatibility of C4I systems, multinational/joint training implications, and command and control responsibilities.

8. Participated in the NATO Land Operations 2020 Technology Seminar Wargame 3 – 13 March, in the UK. This exercise is a major part of the LO2020 Study. The TSW was designed to assess proposed weapons systems that are being developed for NATO land forces. The intended outcome is to rank battle-field systems and their inherent technologies to establish a framework for focusing research and development activities. FBD provided four proposed AAN systems to the Study Group including advanced UAVs. A final report of this effort is expected in the summer.

9. Participated in the Pol/Mil Workshop, Mc Lean, Va, 22 –24 Mar. This workshop is precursor to the SWG in that it provides the venue for the political decision-making that will create the strategic framework for subsequent military operation in the SWG.

10. The Director, FBD received briefings on AAN STO Enhancement Program nominations, 16 – 17 March. The purpose of these presentations were to assess the merit of the nominations for AAN STOs. DCSDOC input was a critical step prior to presentation to HQ, AMC for final approval. During the review, DCSDOC evaluated 25 AAN STO enhancements, the focus of which were enhancements to future ground systems, future force protection, and capabilities and technologies that enhance soldier effectiveness. Additionally, in conjunction with DCSCD, suggested the development of AAN Future Operational capabilities to support the future of the STO Enhancement Process.

11. Conducted the Fires IIT Kick-off session 11 – 13 Mar at the Ramada Inn Conference Center in Newport News, VA. The meeting, jointly sponsored by FBD and the U.S. Army Research Laboratory, was purposed to: (1) Investigate AAN-era fires concepts, supporting capability requirements, and notional system descriptions for the 2025 time frame and beyond; and (2) Identify enabling technologies for

each concept, to include prioritizing key technologies. The group of over 128 participants consisted of operational community, other services, National Labs and technologies in the S&T community (DoD and Industry). Follow-on milestones include: Group Leaders meeting to ensure groups are on track with goals of the IIT; Three Day working meeting with all four groups; Mid-Point IPR with TRADOC Final report (Sep 98). (POC Future Battle Directorate: Mr. David C. Mock, Study and Research Director, AAN Project, DSN 680-4270 or email mockd@monroe.army.mil.

## **Wargaming Directorate**

1. During this quarter, the major AAN Wargaming activity has been the preparation for the Spring Wargame (SWG) scheduled to be conducted during the period of 20-30 April, 98 at Carlisle Barracks, PA. The purpose of this wargame is to examine the nature of warfare and possible roles for U.S. landpower in major crises in the year 2021. The wargame research is focused on the following areas: asymmetric and transnational threats against the U.S. mainland and against U.S. Forces; the implications and impacts of globalization and urbanization/ weather and restricted terrain on future conflicts; the challenges associated with strategic and operational logistics and mobility; and finally, future roles and missions for the reserve components.

2. On, 16 Dec 97, the Director of Wargaming for the AAN Project hosted the first-ever "Joint Wargaming Summit" for the key representatives of the various joint and government interagency wargaming organizations. The summit was held in Hampton, VA and its purpose was to explore possibilities for collaboration and cooperation among the services in their strategic future wargames, and compare calendars to aid in de-confliction of scheduling, especially of human resources. Key topics discussed included shared scenarios and "futures," force structures, game controllers and assessors, selection process for players, space play, and a flag officer wargaming conference. The Naval War College agreed to host the next summit meeting in Jun 98 at Newport, RI.

3. A number of major activities occurred in the AAN "franchises" covering space, information operations, special operations, and logistics. The AAN Space Game II which was conducted by the Space and Missile Defense Command at Colorado Springs, CO during the period 28 Jan - 6 Feb 98. The AAN Army Special Operations Game II was conducted at Ft. Bragg, NC from 22-27 Feb 98. Additionally, the TRADOC DCSINT conducted the AAN Information Operations Seminar 2-6 Mar 98 at Ft. Monroe. The Logistics franchise participated in the Tactical Wargames conducted in November and December

producing a variety of insights and issues in the critical areas of deployability, sustainability, and logistics. (AAN Wargaming POC is Mr. Rittenhouse DSN680-3894 RITTENHB@EMH10.MONROE.ARMY.MIL)

### **International Army Programs**

All engagement activities were crucial to furthering our National Military Strategy and served to enhance the U.S. Army's capability for multinational force compatibility. TRADOC remains extensively involved in international activities with allied and friendly armies and the events cited below capture our 2nd quarter activities:

#### **Bilateral Staff Talks (ST)**

- Japan/U.S. ST were conducted at Fort Huachuca 1-5 Mar 98.

#### **Steering Committees (SC)**

- Israel/U.S. SC delegation led by MG Clark, 11-14 Jan 98
- Spanish/U.S. SC was conducted at Fort Monroe, 31 Mar - 1 Apr 98.

#### **Distinguished Visits**

- TRADOC to foreign locations - MG Goff, DCST, visit to China 7-15 Mar 98. (CH)

#### **Foreign Visitors to HQ TRADOC**

- BG Roye, India's Military Attaché, 9 Feb 98. (IN)
- GEN Tang, Commander in Chief of Taiwan Army, 19-20 Feb 98. (TW)
- MG Guerrero, CG Venezuelan Army, 2 Mar 98. (VE)
- MG Hartley, Australian, Deputy Chief of Army, 9 Mar 98. (AS)
- GEN Karamat, Pakistani CSA, 10 Mar 98. (PK)
- BG Bailey, Allied Command Europe Rapid Reaction Corps, 17 Mar 98. (ARRC)
- BG Reinholdsson, Swedish National Defense College, 19 Mar 98. (SW)
- MG Roozendaal, Commander Royal Netherlands Army Training Commander, 23 Mar 98. (NL)

#### **Subject Matter Expert Exchanges**

- Ordinance School participated in a maintenance SMEE in Japan 16-20 Feb 98. (JA)
- Hungarian SMEE visited HQ TRADOC to discuss a variety of training issues 2 Mar 98. (HU)
- MP School participated in a Force Protection SMEE in Japan 9-13 Mar 98. (JA)

(POC International Army Programs Directorate: Ms Mitchell, DSN 680-2463, or MITCHELE@monroe.army.mil)

## **TRAINING**

*Our challenge is to maintain the essence of our education and training system, the Army University, not the pieces. This means a quality "Total Army School System", but not necessarily at the current locations. Our training strategy must utilize the best combination of live, virtual and constructive simulations and simulators. This strategy must unite the many ongoing efforts into a clear, coherent vision to produce trained and ready units in the environment of the next century. Some of our efforts in that direction follow.*

### **ARMY TRAINING XXI Programs and Initiatives:**

#### **Force of Tomorrow:**

The U.S. Army designs the 21st Century (Army XXI) beginning now to achieve related fielding and support decisions by the year 2000 in order to fully field the total Army force that is capable of meeting our Nation's 21st Century challenges. Army XXI will be built in a series of iterations guided by decisions made at successive quarterly DoD/Army XXI AAR meetings. The campaign includes three axes: Joint Venture (main axis); TDA/Institutional Army (supporting axis); and the Army Digitization Office (supporting axis). Using Joint Venture (JV), the Army is executing a series of Advanced Warfighting Experiments (AWE) and Advanced Warfighting Demonstrations (AWD) to define the force of tomorrow: Army XXI. The strategic objective is to transform the force from an Industrial Age Army to a knowledge and capabilities based, power projection Army (Army XXI), capable of land force dominance across the continuum of 21st Century military operation, by redesigning the fighting forces and leveraging information technology to better support combat and sustainment base functions. As the Army creates Army XXI, we must concurrently develop the means and methods to train and sustain the force. To achieve the maximum potential of Army XXI, the Army must use a spiral development process allowing early decisions based on projected requirements and emerging concepts. By using the spiral development process, the Army can leverage technological improvements to continually integrate changes as tomorrow's force is developed. (POC - COL Leiferman, DSN 680-5720/e-mail: leifermh@monroe.army.mil)

#### **Army Training XXI (AT XXI):**

TRADOC developed the AT XXI concept to ensure that training is included in every phase of Army XXI

development. AT XXI integrates all the numerous on-going initiatives and future developmental efforts to produce a coherent, integrated training system and strategy for Army XXI. In June 1995, the Army Deputy Chief of Staff for Operations (DCSOPS) formally acknowledged AT XXI as the training component of the JV axis of the Army Campaign Plan to develop Army XXI. TRADOC's AT XXI concept incorporates three strategic plans in the development of the JV training component: Warfighter XXI (WF XXI), Warrior XXI (W XXI) and Warfighter Modernization XXI (WarMod XXI).

- o The WF XXI Campaign Plan (CP) is the main attack for AT XXI and focuses on the unit training pillar. The WF XXI CP provides a strategic vision and an integrated plan for how the future Army will train soldier, leader battle staff and collective tasks.

- o The W XXI CP focuses on the development of the institutional and self-development pillars of training. The W XXI CP provides a strategic vision and an integrated plan for the development of the Total Army School System (TASS) to meet the institutional and self development training needs of Force XXI.

- o WarMod XXI is a reinvention initiative to synchronize and link training acquisition with Force Modernization. The WarMod focus is to enforce DoD and Army policy regarding the development and procurement of system Training Support Packages (TSP) concurrently with the materiel system and funded by the system Project Manager (PM).

## **WARFIGHTER XXI Programs and Initiatives:**

### **WARFIGHTER XXI TRAINING STRATEGY:**

Army XXI will have the same training mission as today - produce combat ready soldiers and units capable of fighting and winning on the modern battlefield. Although the training imperative of tough, demanding, battle focused training to established standards will also remain the same, the way we train those soldiers and units will change. This change is brought about by a number of factors - reduced training dollars, increased deployments that result in less training time, ever increasing environmental considerations and significant advances in our ability to acquire and transmit information. These factors will require a training strategy that leverages existing and emerging training concepts and technologies - a strategy that balances live, virtual, constructed and embedded training. Live training will remain the bedrock of our training strategy, however, we must increasingly rely on

training aids, devices, simulators and simulations (TADSS) to compensate for reduced resources. The WARFIGHTER XXI Training Strategy will encompass individual training in the unit, leader development, battle staff training, and unit collective training from the crew through Corps. As we strive to meet these goals, we will rely on several training development and training management "Enhancers" to assist the commander and his staff. (POC - COL Harry Leiferman, DSN 680-5720/e-mail: leifermh@monroe.army.mil)

### **WF XXI ENHANCERS:**

The five key training development and training management tools that will assist the commander as he prepares, executes, and assesses training in the future are: the Standard Army Training System (SATS); Training Support Packages (TSP); Training Aids Devices, Simulations, and Simulators (TADSS); the Standard Army After Action Review System (STAARS); and the Army Doctrine & Training Digital Library (ADTDL).

- o SATS (under development by the Army Training Support Center) provides an automated training management system designed to enhance the planning, resourcing, execution and assessment of battle-focused training for the unit and unit commander.

- o Training Support Packages (TSPs) are task based information package(s) that provide structured situational training scenarios for live, virtual, and/or constructive training environments, and assist the commander in conducting and assessing training. TSPs for battalion through corps are under development. Warfighter TSPs will be produced in ASAT and electronically connected to SATS through the ADTDL.

- o TADSS provides integrated, effective tools for the unit and institutional commander to efficiently conduct training.

- o The STAARS provides a standardized, automated storage and distribution system giving the unit and institutional commander a training assessment and resource tool and the Army a doctrinal based information collection system.

- o The ADTDL (under development by the Army Training Support Center) stores the data and provides unit and institutional commanders access to data from many information sources necessary to plan, resource, execute, and assess training. (POC - COL Harry Leiferman, DSN 680-5720/e-mail: leifermh@monroe.army.mil)

## **WARRIOR XXI**

### **Programs and Initiatives:**

#### **Warrior XXI:**

WARRIOR XXI defines those future activities in the TDA Army and the institutional axis of Force XXI required to train the total Army of the future. WARRIOR XXI has eight major initiatives. Each of these lanes represent a major initiative which will dramatically change the way we organize and how we manage and train soldiers of the future. These initiatives are: Total Army Distance Learning Program, Classroom XXI, Deployable Training/Mission Rehearsal, Total Army School System (TASS), Diagnostics, Communication Networks, Automation/Digitization, and Training Development. These initiatives will change the training paradigm for both institutional and self-development training. When combined with WarMod XXI, and WARFIGHTER, the main effort, WARRIOR XXI will provide the architectural foundation for the future Army institutional schoolhouses. (POC - Mr. Buckley, DSN 680-5535/e-mail:buckleyj@monroe.army.mil)

#### **Total Army Distance Learning Program (TADLP):**

Distance learning is a concept for the delivery of training to the soldier when and where it is needed. It is the engine of change that makes Classroom XXI achievable. Distance learning is not a discrete technology but incorporates a number of existing and emerging technologies to move distributed learning from the realm of the possible to that of the practical. In the past we were heavily utilizing satellite based VTT to deliver distance learning training products. We are now moving into fiber optics as a first step toward moving to Internet connectivity. The Total Army Distance Learning Program is the vehicle is the vehicle to move us from today to the future. The Plan was approved in 1996 by the Army Chief of Staff who, appointed TRADOC as executive agent. This is a long range plan which takes us to the year 2010. It includes our plans for courseware conversion, facilities, hardware, infrastructure, and funding requirements. This plan is for the Total Army and is a living document. Training will be distributed in either a synchronous mode (real time) or asynchronous mode where it can be retrieved without time constraints. A new requirement will be emerging for Army Training Support Cluster (ATSC) to publish "TV Training Guides" which provides a schedule of "live" or synchronous listings. These should also include other DoD and programs provided by civilian organizations linked into the Army system. A media library catalog for asynchronous training materials will be provided through the Army Doctrine & Training Digital Library (ADTDL). This will be

accessible via extensive worldwide corporate and government electronic networks. (POC - LTC Rodis, DSN 680-5529/e-mail Rodissj@monroe.army.mil)

#### **Classroom XXI (CR XXI):**

Classroom XXI is the foundation that makes distance learning a reality. It enables us to take the classroom to the battlefield and the battlefield to the classroom. It creates the infrastructure at Army schools to link together all the Army's training environments. CR XXI consists of 3 components: fully networked school system; digital training access centers; and 5 levels of classroom capability. The classroom XXI master plan defines hardware and engineering standards for modernization. The new standards support not only engineering requirements for integration of technology but also provide the optimum learning environment for our soldiers. Since things are moving so rapidly in the information technology arena, we are working with West Point's computer science and electrical engineering department to keep abreast of and test the latest educational technological innovations. They advise us if these technologies are compatible with classroom XXI hardware. Based on their evaluation and assessments, a recommended hardware specification has been prepared and posted on the DCST home page on the Internet. All equipment on this list is compliant with DoD standards and is commercially available through GSA contract sources. The list is updated on a quarterly basis. (POC - Ms Dobbie, DSN 680-5527/e-mail dobieg@monroe.army.mil)

#### **Total Army School System (TASS):**

The Total Army School System (TASS) was implemented Nationwide on 1 October, 1996. It is coordinated through the TRADOC Coordinating Element (TCE) at Fort Monroe, VA, and seven Regional Coordinating Elements (RCEs). The RCEs are located at Fort(s) Devens (Region A), Lee (Region B), Jackson (Region C), Knox (Region D), McCoy (Region E), Sill (Region F), and Lewis (Region G). TASS Policy Regulation, TRADOC Regulation 351-18, was developed, staffed, and distributed to the Army Training Community with guidelines for TASS Implementation. The TCE, TRADOC executive agent for TASS, supervises the RCEs and manages the TRADOC TASS Title XI program. The RCEs are responsible for tracking training within their regions, assisting in the resolution of training issues, verifying corrective actions on accreditation issues, regional ammunition management, and oversight of Title XI soldiers. First and Fifth U.S. Armies serve as the FORSCOM executive agents for TASS and are responsible for coordinating Annual Training (AT) locations, facilities, courseware, equipment, and assist in identifying training priorities for units. Army National Guard (ARNG) and U. S. Army

Reserve Command (USARC) responsibilities include resourcing units to support individual training requirements, ensuring equipment availability based on training requirements, participating in the Structure and Manning Decision Review (SMDR), Training Requirements Review Panel (TRAP) processes, and maintaining coordination relationship with the RCEs. TRADOC Proponent Schools are responsible for Program of Instruction (POI) development, Instructor Certification, and school accreditation. The TASS transition year was FY96, full implementation FY97, with school accreditation beginning in FY98. TASS school organizations are standing up in USAREUR and USARPAC. TRADOC, NGB, and USARC are reviewing the process of tailoring the originally conceived TASS force structure to better support training requirements. The initial fielding of the 415 Title XI soldiers is near completion. (POC - LTC Cummings, DSN 680-5768/ e-mail cummings@monroe.army.mil)

#### **Total Army Training System (TATS) Course:**

Development and implementation of TATS courses are objectives of the Total Army School System (TASS). Toward this end, one of the key goals of the TASS is to transition from both Reserve Component Configured Courseware (RC3) and Active Component courses into single POI TATS courses. The value of TATS courses lies in the Army's ability to ensure that soldiers in all components are trained to the same performance standard. Specifically, a TATS course is defined as a course designed to train the Total Army to the same Military Occupational Specialty/Area of Concentration (MOS/AOC), Additional Skill Identifier (ASI), Language Identifier Code (LIC), Skill Qualification Identifier (SQI), or Skill Identifier (SI) within the Total Army. It includes all Army leadership, functional, professional development, and civilian courses. TATS courses ensure standardization by training all course critical tasks to task standard. It may be trained at different sites and involves use of the same course structure, phases, modules, and media / methods for each training site.

TR 350-70 (Training Development Management, Processes, and Products/ SEP 95) provides guidance on TATS course analysis, design, development, implementation, and evaluation. TR 350-70 provides a one-stop source of all training development by consolidating 17 TRADOC publications. TATS 350-70 (TATS Course Handbook/APR 96) provides further TATS course analysis and design "how-to" guidance. The overall goal is for proponent schools to completely transition from RC3/AC courses to TATS courses NLT end of FY 98. (POC - Ms. Vallery Doe, DSN : 680-5564, e-mail doev@monroe.army.mil)

#### **Training Development (TD):**

Training Development ensures the highest return on training resource investments by examining individual and collective performance requirements to identify:

- which task performances to train (what);
- which units and individuals need training (who);
- the most cost-effective means of meeting the training need (when/where/how);
- the training approaches that can best expand soldier and unit performance capabilities (when/where/how);
- improvements to the training system that will generate increased return on investment (what).

The goal of AT XXI and all its associated initiatives is to produce a force that can fight and win future battles. The learning to be achieved by individual soldiers and by units, and their ultimate ability to perform, will be determined by the quality of the training products themselves, not the media that delivers them. Our environment of constant change and evolving technology demands a TD system that can quickly adapt existing training products and programs to evolving delivery capabilities and to changing individual and unit performance requirements. The Army's TD system will not just keep pace with these changes, but will anticipate them, balancing effective training with resource efficiency. (POC - Ms. Pamela Calver, DSN 680-5565/ e-mail: calverp@monroe.army.mil)

#### **TRADOC Regulation 350-70:**

The TRADOC Regulation 350-70, Training Development Management, Processes, and Products, is a consolidation of all training development (TD) policy (13 TRADOC regulations, four TRADOC pamphlets, several TRADOC memorandums, and TD policy extraction from two other training regulations) into one regulation. The current version was fielded 24 Sep 95.. The regulation covers the TD process (the Systems Approach to Training (SAT)); training/TD management; Total Army Training System (TATS) Course analysis, design, development, coordination, and management; TASS QA/evaluation, including institutional accreditation, instructor certification, and product validation; training product development (individual, collective, self development); and DCST vision of TD initiatives that support Force XXI. A new draft version was staffed in Sep 97. This version will incorporate a fourteenth TRADOC regulation, TR 350-35, The Combined Arms Training Strategy, as well as new policy for Combat Training Center TD interface, Classroom XXI, distance learning, training/TD automation, sustaining base



training management, instructor certification, etc. (POC - Rachel Serio, DSN 680-5576/e-mail serior@monroe.army.mil)

#### **TRADOC Staff and Faculty Training Program:**

The Staff and Faculty Training Program is composed of three major elements: HQ TRADOC (DCST), schools/training battalions, and the Army Training Support Center. As the policy proponent, the DCST is responsible for standardizing, approving, and managing staff and faculty development which is required Army wide, TRADOC-wide, or at multiple TRADOC sites such as instructor training, small group facilitator training, and training development training. DCST offers consolidated centralized training manager training in the Senior Training Managers' Course and the Training Developer Middle Managers' Course. TRADOC and RC schools (training battalions) offer staff and faculty development using the mandated instructor training, the standardized Small Group Instruction Training course, and the Systems Approach to Training course. The staff and faculty development elements at TRADOC schools also provide training to meet local requirements. The ATSC program is a centralized support system to develop and deliver standardized video teletraining for Active and Reserve Components (AC and RC) instructors as part of the Total Army School System (TASS). As program manager, ATSC will provide standardized training, course design, development, delivery (to include multimedia technology), certificates, course material reproduction, and student management. Under the TASS concept, AC and RC instructors can be linked via satellite to the proponent responsible for instructor training. ATSC's efforts currently focus on three standardized courses: Small Group Instructor Training Course (SGITC), Total Army Instructor Training Course (TAITC), and Video Teletraining Instructor Training Course (VTTITC). These courses have the option of being delivered in a regular classroom setting or via distance learning technology to facilitate standardized cost effective training Army wide. (POC - Ms. Pamela Calver, DSN 680-5565/e-mail calverp@monroe.army.mil)

## **WARFIGHTER MODERNIZATION XXI:**

#### **(WarMod XXI):**

WarMod is the TRADOC management vision of how to conduct and resource Army Modernization Training (AMT). TRADOC, through the requirements determination process, will develop AMT strategies and identify requirements for multi-media/multi-purpose training support products which leverage the use of distance learning technologies. For a family or fleet of systems, TRADOC will develop

common and system-specific AMT strategies and TSP requirements based on the common hardware of the fleet and the unique components of each system. As a part of Army Training XXI, the WarMod axis consists of five components which must be synchronized for each acquisition program to ensure a total system package/capability is fielded to the Force. WarMod XXI is the foundation for the three training pillars (institutional training, new and cascaded equipment training, and unit sustainment training). POC - Mr. Ronneberg, DSN 927-2546, e-mail ronnebed@atsc.army.mil)

## **INITIAL ENTRY TRAINING (IET) INITIATIVES**

#### **Human Relations Action Plan (HRAP):**

In response to incidents in the fall of 1996, the Department of the Army Inspector General (DAIG) began its special investigation of sexual misconduct in IET. In December 96, the Secretary of the Army (SEC ARMY) appointed a Special Task Force on Sexual Misconduct in the Army chaired by MG (Retired) Seigfried. The findings of both the DAIG and Seigfried Task Force were accepted by the SEC ARMY in June 97. Recommendations and findings from these agency's reports were consolidated to form the Human Relations Action Plan (HRAP). The HRAP addressed 17 major issues including leadership, HR policies and practices, HR training, EO policies and procedures, climate assessments, training base support, IET, drill sergeant and instructor selection process, AIT, and core values. This translates into approximately 240 actions in the 17 areas of concentration. TRADOC is lead for over 90 actions and assists other agencies on 40 others. Key actions taken to date include the appointment of the DCST as the Human Relations training proponent, the development of the additional week in IET, change in Drill Sergeant selection process, change in DSS curriculum and the addition of support personnel to BCT and AIT organizations. (POC - LTC Beck, DSN 680-5604/E-mail becke@monroe.army.mil)

#### **Gender Integrated Training (GIT):**

The Federal Advisory Committee on Gender Integrated Training and Related Issues committee was established by the SECDEF in July 1997 to "assess the current training programs and policies with emphasis on initial entry training programs and policies of the Army, Navy, Air Force, and Marine Corps necessary to assure the readiness and effectiveness of the all volunteer force and provide such advice and make such recommendations as the committee considers warranted." In addition, they were chartered to examine related morale and

discipline issues. The committee, headed by former Senator Nancy Kassebaum, issued its final report to the Secretary of Defense on 16 December 1997. The Kassebaum Committee's final report made 31 recommendations in the areas of recruiting policy, training cadre, basic training organization, basic training requirements, teaching professional relationships, advanced school, values training and training resources. TRADOC has developed responses to 25 of the 31 recommendations, which include responses in all areas addressed by the report except for recruiting policy. TRADOC Regulation (TR) 350-6 (Initial Entry Training Policy and Administration) incorporates numerous recommendations from the HRAP, Seigfried, DAIG and Kassebaum Commission reports. This document directs the addition of one week to BCT/OSUT, adds the requirement for training values, history and tradition in the military, adds rigor to the training process by increasing standards and adding additional training, requires physical separation of genders but mandates gender integrated training, clarifies the buddy system, and requires AARs and sensing sessions by commanders throughout the IET process. (POC - LTC Beck, DSN 680-5604/E-mail bekc@monroe.army.mil)

#### **Additional Week Added to IET:**

In May 97 the CSA directed TRADOC to take a fresh look on how IET was being conducted and develop a training program designed to increase the quality of soldiers leaving the training base. In Sep 97, the SECDEF/CSA released the Army Human Relations Action Plan which provided guidance on what changes were necessary to improve human relations in today's Army. TRADOC adopted guidance, and on 18 Sep 97 the IET concept was briefed and accepted by the CSA. The focus of the program is to develop disciplined, team oriented soldiers who are physically and mentally prepared to meet the challenges of today's Army. The objective of the program is to provide the fighting force with soldiers who have inculcated Army values, ethics, and traditions through tough, realistic training. Expansion of basic combat training (BCT) and one station unit training (OSUT) by one additional week (from 8 to 9 weeks in BCT). This additional week includes 54 additional hours of training spread across all three phases of BCT. This training includes 27 additional academic hours dedicated to human relations, values and traditions, and equal opportunity/ prevention of sexual harassment training. The development of training products and videos to support this new program of instruction (POI) is on schedule for delivery by 1 Jul 98. There will be increased rigor in IET through toughened physical fitness standards, 6 additional hours of physical fitness training, and a 72 hour "Warrior" FTX where trainees will be required to demonstrate their tactical survival skills in a

simulated combat environment. This will also include a single standard for all obstacle courses and road marches, and all trainees must demonstrate proficiency in ten non-waiverable graduation requirements in BCT. The additional time will also provide 9 additional hours of drill sergeant contact time for after-action reviews and 8 hours for sensing sessions and AAR's by the chain-of-command. Implementation of this additional week in BCT is scheduled for 1 Oct 1998. Development of an additional 16 hours of training to advanced individual training (AIT) is ongoing. This training reinforces and expands training received in BCT on human relations, values and traditions and EO/POSH training. Implementation is currently planned for 1 Nov 1998. (POC - MAJ Charsagua, DSN 680-5609/E-mail charsagj@monroe.army.mil)

## **LEADER DEVELOPMENT**

#### **Common Core:**

Common military and directed/mandated training requirements have been incorporated into a single task list for each leader training, education and development course (Precommissioning training, OBC, OAC, WOCS, WOBC, WOAC, PLDC, BNCOC, and ANCOC. Common core consists of 183 tasks that satisfy 420 training requirements in these courses. Additionally, common core for senior level courses (CAS3, CGSOC, WOSC, WOSSC, FSC, and SMC) consists of 46 subjects course proponents will incorporate into curriculums. Phase I (identification and vertical alignment of tasks) and Phase II (validation and horizontal alignment of tasks) are complete. Phase III (development of digitized training support products and training implementation) will be completed by 1 October 1998. Phase IV (conversion of digitized training support products to Interactive Multimedia Instruction) is projected for completion by 1 October 2000. (POC - Mr. Ligon, DSN 680-5661/e-mail ligonj@monroe.army.mil)

#### **Captain's Professional Military Education:**

CG's intent is provide captains with professional military education that meets Army's current needs and is relevant for Army XXI. Consistent with this intent, CPT PME is a phased initiative which synchronizes captain institutional training with assignments, eliminates disruption to units, and eliminates CAS3 backlog. Phase I was the previous system with separate OAC and CAS3 separated by one or more PCS moves. Currently in progress, Phase II links OAC with a shortened 6-week CAS3 course. OAC graduates flow directly to CAS3 in a TDY-enroute or return status. Beginning FY99,

captains will attend a Captains Career Course (Phase III). This course will consist of three parts. Officer will PCS to branch schools/centers and common core instruction through several media and branch-technical/tactical instruction using small group methodology. Upon completion, officers move in TDY-enroute or return status to FT Leavenworth for 6-week staff process instruction. Beginning FY02 (Phase IV/end state), officers will PCS to enduring battlefield function for all PME instruction. Exploitation of information-age technology will enhance both branch-unique and staff-process training. Captains from multiple sites will engage in active learning with each other while led by a senior staff group leader. (POC - MAJ Higginbottom, DSN 680-5663/E-mail higginbm@monroe.army.mil)

## ORGANIZATIONS

*Force Design Directorate is the central point of contact within TRADOC for force design and force structure actions. It is the executive agent for the Total Army Analysis (TAA) process which determines the total force requirements for the Army. Also, as the proponent for design of TOE units, it coordinates all TRADOC force design activities.*

### Force XXI:

#### **Development of a revised Heavy Division design continued during the second quarter:**

Using lessons learned from the November 1997 DAWC and guidance provided by DCG, TRADOC, three conferences were held during January 1998 that developed a final design proposal which has been labeled the "base case division." The design has been briefed to and approved by the Army Board of Directors and the CSA, however details will not be released until a public announcement by the CSA now tentatively scheduled for 27 April 1998. In general, the design has been adjusted so that when implemented in 1999, it will remain small, with AC strength capped at about 15,000 personnel. Ground maneuver battalions will remain capped at about 45 systems (tanks or Bradleys) per battalion and the new logistics concept remains integral.

#### **Documentation of the proposed designs by Requirements Documentation Directorate (RDD) is underway:**

Combat and combat support designs are tentatively scheduled for completion near the end of April 1998, with the detailed DISCOM documentation to be completed 30–60 days later.

### **Top Down Force Design and Organization Modularity:**

Based on the Modularity Concept, TRADOC will continue development of modular, functionally-based forces that can better align the force with Force XXI development initiatives. The Top Down Force Design concept focuses on development of organizational designs that eliminate redundant "Cold War" Headquarters and streamline other C2 structures and organizations. Near term Top Down Force Design/Modularity efforts are designed, evaluated and approved through the Force Design Update (FDU) process and executed in the TAA process. These Top Down Force Design/Modularity efforts are integrated into Force XXI development initiatives.

#### **Force Design Update (FDU):**

The FDU process evaluates and presents to the Army's senior leadership, for approval, organizational issues or design changes affecting DTLOMS raised by CINCs, MACOMs or the proponent schools. Final approval in the FDU process is by the Chief of Staff of the Army. Normally, two FDU cycles are processed each year.

#### **FDU 96-2:**

Awaiting brief (2 Apr 98) to TRADOC DCG for final TRADOC position. Briefed Mr. Resnick, acting TRADOC DCSCD on 4 Mar 98 on the response from field staffing. During the period the MI Reduction of S2 issue was moved from 97-1 to this FDU due to time constraints imposed upon the issue. Cycle began Aug 96. (POC is MAJ Trauger, ATCD-FB, DSN: 552-8625.)

#### **Battlefield Distribution (BD) - Proponent is CASCOC:**

BD is an operational concept to improve distribution operations in force projection theaters. BD is a holistic concept that involves limited organizational restructuring to enhance the functionality of units performing distribution missions, improved doctrine for distribution management, major technology enhancements, and re-engineered battlefield operating procedures. Characteristics of the concept include a designated distribution manager at each level of command, employment of a hub and spoke distribution system, throughput operations, asset visibility, and a modular theater force opening package. BD is part of the Velocity Management Initiative.

#### **Theater Support Command (TSC) - Proponent is CASCOC:**

Concept is a US Army CASCOC organizational redesign that will lead to the development of a command structure for force projection and sustainment operations in a theater of operations. The TSC

is a multi-functional organization of support functions at EAC. The concept organization eliminates the need for the TAACOM and TAMMC. The TAACOM MMC and TAMCA will be redesignated as the TSC MMC and TSC MCA respectively. The concept proposes an option to place the traditional theater level functions of personnel service support, health service support, transportation support, finance support, and engineer support under the TSC. If the ASCC prefers this option, the TSC would then serve as the ASCC's single point of contact for execution of support operations.

#### **Battlefield Coordination Detachment (BCD):**

Battlefield Coordination Element (BCE) is redesigned as BCD. Redesign increases personnel authorization levels and provides organic communications equipment to the BCD. 3 AC and 1 RC BCE's are redesigned. Army and Air Force developed BCE concept in 1980 to assist in interdiction of enemy reinforcing and follow-on forces before they could support the enemy's close battle (follow-on forces attack/deep operations). BCE TOE 51002L000 was published in 1990. Doctrine, personnel and equipment requirements have changed significantly. TRADOC Pam 525-45 was rescinded and work began on FM 100-13, BCDs. Final Approved Draft FM 100-13 was published 26 Apr 96, and prescribes new personnel and equipment requirements for the BCD to successfully conduct operations. BCD TOE requirement is 16 officers, 1 WO, and 22 enl.

#### **Reduction of EAC CS / CSS S-2 sections:**

This proposal nominates for elimination the Military Intelligence (MI) Officers and NCOs in selected EAC CS and CSS TOE (23 separate SRCs) where (IAW the MI proponent's assessment) risk could be assumed. In the affected TOEs the loss of MI officers and NCOs will be substituted by own predominant MOS officers and NCOs. The proposed elimination will affect 198 MI specific spaces in the selected TOEs. The targeted units are EAC units where S-2 duties are primarily those of security management.

#### **FDU 97-1 consists of a total of 11 issues:**

The issues cover a wide variety of Army warfighting areas. The field comments phase of the FDU was completed in February. Currently, a General Officer level briefing that integrates the field comments is being prepared at the Force Design Directorate. A brief synopsis of each one of the issues under consideration is as follows:

#### **Fire Fighting Redesign:**

The concept addresses the elimination of COMPO 4 one-of-a-kind fire fighting teams (crash rescue/brush truck) that are no longer needed. It also

combines into one comprehensive team the functions and equipment on the water truck team and the fire truck team in order to have one team performing all fire fighting missions. The HQ team is slightly changed to accommodate an organic limited maintenance capability (1 63B instead of a 71L). A Standards of Grade change is also envisioned in order to support the increase in capabilities in the Fire Truck Team. The COMPO 4 fire fighting space and teams requirements are reduced by approximately 50 % (- 429 teams from 756 and -1333 spaces from the current 2308 spaces). COMPOs 1-3 will ultimately have a total of 68 comprehensive (water truck and fire truck) Fire Fighting Teams. The equipment bill is 4.2 million primarily to acquire water distribution trucks and trailers.

#### **Light Brigade Engineer Section:**

This issue consists of the redesign of all light forces engineer sections at the brigade level. The issue attempts to gain an organic 24 hr capability, communications and transportation capabilities for the LT Bde Engineer Sections. This issue will standardized all sections in light forces. The standard section will consist of 4 personnel ( 1 Officer, 3 Enlisted). This issue creates 53 claimants for all COMPOs.

#### **Strategic Signal BDE HQ:**

Primarily a documentation issue. This issue was mandated by the Director, Force Programs. It directed the Army Signal Command (ASC) and the Signal Center (SIGCEN) to determine the best organizational design within established constraints. The issue consists of creating a Table of Organization (TOE) for the existing Echelon Above Corps (EAC) headquarters of the SSB. There is a growth of four (4) officer spaces, but no equipment growth.

#### **TRI-TAC CO:**

It consists of the addition (in TOE format) of the Joint Task Force (JTF) Communications Center (18 spaces) and the Command Post Radio Section (16 spaces) to D CO, 327th Signal BN, 35th Signal BDE, XVIII Airborne Corps. These two sections currently exist as a result of a Modified Table of Organization and Equipment (MTOE).

#### **AVIM CO in ACR:**

Organic assignment to the ACR of the AVIM CO that normally provides DS AVIM support from the COSCOM. This action advocates the need to provide unity of effort to ACR operations. This AVIM CO is the only DS unit not organic to the ACR. Because the AVIM CO would be assigned to the Regimental Support Squadron (RSS) a discreet growth of 9 spaces (3 per AVIM CO) is anticipated. No equipment growth is expected at this time.

### **Elimination of TARC/TARP:**

This issue advocates the elimination of three (3) Corps level TARCs and seven (7) division level TARPs. The issue follows a trend of eliminating these units as we posture to a Force XXI Army. In the TAA 05 Resourcing Council of Colonels conducted in October, consensus among all participants was reached for the elimination of all TARC / TARP current organizations. The personnel savings in COMPO 1 is only 7 spaces (most of billpayers used previously by FORSCOM). For COMPO 2 the savings are 471 spaces.

### **AH-64 in LID and Airborne Divisions:**

This issue originated with XVIII ABN Corps in light of Operation Uphold Democracy in Haiti. The issue consists of converting the Kiowa Warrior equipped (82nd, 10th, divisions) and AH-1 equipped (25th, 29th divisions) to AH-64 equipped Attack Bns. Ultimately, this issue will enable light forces to shape the close fight by engaging deep targets. The issue also provides an opportunity to create additional AH-64 aviator force structure that could later serve as a "pool" to support increasing requirements. This issue has 195 claimants for COMPO 1 and 48 for COMPO 2. The personnel increase is primarily due to increase of mechanics.

### **Theater Signal Maintenance CO:**

TSMC redesign was directed by Director Force Programs IAW Centralized Documentation Guidance. This issue redesigns the maintenance support required by the Tactical Signal Brigades that may be employed in two nearly simultaneous Major Regional Contingencies (MRC). The total wartime requirement is for two TSMCs. One company to be resourced in COMPO 1, the other one in any, or a combination of COMPOs 2,3, or 4. TSMC provides for a modular unit design, (two SRCs within the CO) capable of providing dedicated maintenance and limited supply support to each one of the tactical signal brigades or redeploy sections to another Theater of Operations. The personnel bill for COMPO 1 unit is 43 spaces. The total bill for any or a combination of COMPOs (2-4) is 199. The equipment bill for COMPO1 is 8.3 million.

### **ADA BN in AASLT Division:**

The Commandant of the ADA School directed the standardization of the ADA platoon in all light forces. The basic battery level design will consist of two AVENGER platoons of six (6) Avengers each, and an additional platoon of eight (8) MANPADs. In the AASLT Division, the ADA BN will consist of four ADA Batteries and a HHB (with six Ground Based Sensors). In doing so, twenty-nine space savings are achieved.

### **ADA BN in LID:**

The LID ADA BN will consist of three (3) ADA Batteries and a HHB (also equipped with six Ground Based Sensors). This action currently has thirty five (30) claimants per BN.

### **National Missile Defense:**

A high visibility issue on a fast track. The issue designs a command and line batteries structure capable of defending the United States from accidental or deliberate launches from a limited number of Intercontinental Ballistic Missiles (ICBM). With no anticipated force structure bill to the active component, NMD spaces are provided by the Army National Guard (114 spaces). Contractor support will provide most of the base maintenance and security operations.

A total of 421 spaces is the anticipated total personnel structure. The equipment costs are TBD at this time.

### **FDU 97-Paid Parachute Positions:**

During the recent POM development, the Army's MPA appropriation was reduced by \$3.9M beginning in FY 98. As part of the Bold Venture Initiative, the VCSA directed a reduction of 3,000 Paid Parachute Positions (PPP) in the Army's structure. This reduction will cause a savings of \$3.9M. HQ TRADOC approved 2 Jun 97. VCSA subsequently delegated approval authority to DA DCSOPS, Dir., Force Programs who approved the reductions 27 Jun 97. DAMO-FDF hosted meeting on 16 Dec 97 to develop PPP management recommendations for Dir., Force Programs. Cycle began in Nov 96. (POC is CPT Zehr, ATCD-FA, DSN: 552-8686.)

### **FDU 98-1:**

The FDU cycle began 1 Nov 97. The action officer is MAJ Stokowski, DSN 552-8671, stokowst@leav-emh1.army.mil. Issue packages were due to FDD NLT 9 Dec 97. Issue Review ("Murder") Board VTCs were held on 4 Mar 98 and on 13 Mar 98. The following issues remain in the FDU 98-1.

### **Redesign of Army Criminal Investigation Command Units (USACIDC):**

Proponent: Military Police. The CID Redesign concept draws from existing CID TOE and TDA assets by placing common functions, personnel and equipment into five modular TOEs - two SA Sections, CID Element HQ, Battalion HQ and Group HQ. These TOE will replace the existing eight CID TOEs. The battalion HQ will also have the capability to be a multi-component structured organization. The proposed designs provide maximum efficiency, mission capability, increased force packaging flexibility and improved deployability across all three

operational environments (peace, conflict, and war). CID's TDA elements, which investigate general crime, perform the same functions as the TOE force, but are only organized to operate in a peacetime environment. A TDA to TOE conversion, increases CID's operational capability to be effective in all environments.

#### **TOE Documentation of PMOS 79S, Career Counselors.**

Proponent: Recruiting and Retention School. Career counselors are currently documented on the TDA. However, the majority of career counselors perform their mission with TOE units. Career counselors now routinely deploy with their units and provide all levels of retention support to include counseling, reenlistment, extensions, and reserve component transition. FM 12-6, Personnel Doctrine, states that the retention management system continues during war and during operations other than war (OOTW). TDA cuts in recent years have caused a depletion of the retention force at certain locations. The commanders who actually used these assets had little or no input on the decision to make these cuts. Many commanders have stated their desire to have more control over their counselor assets. Placing the 79S spaces on TOE documents will give commanders direct control over their retention assets. This will enhance the commanders' flexibility in deploying their counselors with their units, and it will assist the commander in accomplishing the retention objective during peacetime, conflict and war.

#### **Redesign of the Special Operations Communications Battalion (Airborne):**

Proponent Signal Center. In 1995, in light of the battalion's multiple deployments to every theater, the scope of the battalion's mission changed to global apportionment in support of all Special Operations Forces (SOF) in all theaters. At that time, the battalion formed and deployed four-signal detachment to support SOF in three theaters and Korea. These detachments provide the initial, crashout communications for theater SOF and provide the services that form the nucleus of a full battalion minus deployment. For this reason, all signal detachments subordinate to the battalion must be similar in organization in order to provide the required services to each theater. The proposed reorganization aligns the battalion to its current, global mission and modernizes the equipment required to support that mission.

New TOE Designs for Army Signal Command EAC Signal Units: The proponent is the Signal Center. Certain EAC signal units are currently organized under placeholder TOEs (SRCs 11626L and 11500LC) that don't correspond to the unit MTOEs or unit missions. This FDU proposal provides a valid

TOE model for these units:

- Strategic Signal Battalions
- Strategic Signal Companies
- Strategic Signal Detachments
- Theater Tactical Signal Company
- Major Signal Support Company (Separate)

Redesign of Theater Tactical Signal Brigade TOE. The proponent is the Signal Center. The proposed concept for Theater Tactical Signal Brigade HHC will allow for equipment modernization and correct command-based deficiencies. This concept establishes an organization that will command and control EAC Tactical Signal Battalions, Theater Strategic organizations, as required and separate companies in support of a theater communications network as a component of the Theater Signal Command. This unit may also provide command and control of these signal forces when deployed as the senior communications headquarters in support of Operations Other Than War (OOTW).

New TOE Design—Tactical Installation Networking Company: The proponent is the Signal Center. This proposal provides an organizational design for the employment of a Tactical Installation and Networking (TIN) Company. The Company will be deploy in support of warfighting CINCs, Army Service Component Command (ASCC) and Theater Signal Command (Army) TSC (A) commanders immediate DCS installation and restoral, tactical automation, network installation and information system support to their deployed headquarters. It will be tailorable and scaleable to provide contingency support and systems integration to sustaining base, strategic, and theater tactical C4 information systems. Lessons learned from Operations Desert Shield/Storm and initial report from Operations Joint Endeavor state a need for a highly skilled, highly technical, and deployable organization to provide immediate and essential information services to the ASCC.

#### **FDU 98-2:**

The FDU cycle will begin Jun 98 with a message calling for issue submissions. The tentative deadline for submission TBD in July 98. The action officer is TBD. Direct questions concerning this FDU to MAJ Stokowski, DSN 552-8671, stokowst@leav-emh1.army.mil

#### **ARNG Integrated Division Process Action Team (IPAT):**

The Secretary of the Army has approved a plan to reorganize some National Guard (NG) Divisions and Brigades to provide resources for additional CS and CSS structure. The plan includes forming two divisions which integrate units of both the AC and

NG. TRADOC was charged with assessing this AC/NG integrated division concept. The assessment determined the viability of the concept by addressing doctrine, organization, training, mobilization, mission capability, and resource impacts. Participants include ARSTAFF, FORSCOM and TRADOC elements. Decision brief to the Secretary of the Army was conducted 6 Aug 97. TRADOC published the study report.

#### **Implementation Process Action Team (IPAT):**

The AC/ARNG Division was established at FORSCOM. The IPAT was chartered by the CSA to work out the details of the activation of two AC/ARNG divisions and provide periodic process reports to the SA and CSA. The IPAT has met and provided recommendations to the SA. SA decision was as follows:

The first division headquarters company (main) will be located at Fort Riley, Kansas, with a forward element at Fort Jackson, S.C. The division headquarters will be commanded by an active component major general, with approximately 200-plus personnel assigned. The forward element, led by a brigadier general, will consist of approximately 15 - 20 personnel. The enhanced Separate Brigades selected as part of the first division are the 30th Mechanized Infantry Brigade of North Carolina, the 218th Mechanized Infantry Brigade of South Carolina, and the 48th Mechanized Infantry Brigade of Georgia.

The second division headquarters company (main) will be located at Fort Carson, Colorado, with a forward element at Fort Polk, LA. The enhanced Separate Brigades selected as part of the first division are the 45th Infantry Brigade of Oklahoma, the 41st Infantry Brigade of Oregon, and the 39th Infantry Brigade of Arkansas.

The division headquarters will provisionally activate 1 October 1998 and the forward headquarters will become operational in the spring of 1999. (POC Mr. Robertson, ATCD-F, DSN 552-8646.)

#### **Documentation Assistance and Review Team (DART):**

A DART has been created as a result of the Equipment PAT. TRADOC will provide one representative to this team and will participate in TOE reviews with divisions, corps and MACOMs. Teams will work with units to ensure TOEs reflect doctrinally sound, minimum essential wartime equipment requirements. Issues impacting TRADOC will be coordinated via the TRADOC representative with the respective proponent/s for resolution. The DART is tentatively scheduled to begin during the second quarter of FY98 with AC divisions receiving priority reviews. (POC is Mr. Hodges, ATCD-FB, DSN 552-8636.)

#### **Total Army Analysis – 2005 (TAA-05):**

TRADOC has completed its work in the Resourcing Phase of TAA-05. FDD, as Executive Agent for TRADOC TAA participation FDD, and the TRADOC leadership ensured that the warfighting requirements, as defined by TRADOC, were maintained. FDD is now reviewing the results of TAA-05, identifying issues to be examined, how the process may be improved, and how best to introduce approved Force XXI designs in the TAA-07 process. FDD is currently preparing for the TAA-07 Requirements Determination Workshops 20-24 April 98 at Concept Analysis Agency. The goal of these two workshops are to determine the capabilities and structure to provide the minimal acceptable Total Force that can accomplish the DPG/NMS requirements. (POC LTC Neil Johnson, ATCD-FB, DSN 552-8621.)

#### **Officer Reduction Initiative (ORI):**

FDD has been charged with developing TRADOC recommendations to the Chief of Staff Army (CSA) on how best to apply ORI to the TOE portion of the force. TRADOC has recommended—and the CSA is considering—not applying ORI to TOE. The CSA is considering the TRADOC recommendation, but has asked TRADOC to extend its look at possible officer requirement rolldowns, as well as authorization rolldowns. TRADOC has updated its ORI recommendation based on a review of all SRC's by the associated proponents and will present the results and associated recommendations in April of 1998. (POC LTC McCullough, ATCD-FB, DSN 552-8626)

## **MATERIEL**

#### **120-mm Battalion Mortar System (BMS) and 120-mm BMS Ammunition:**

The BMS will replace the 4.2-inch mortar. The BMS is a muzzle loaded, smooth bore weapon system that comes in two forms: towed (M120) transported on a two-wheeled trailer towed by a HMMWV; and carrier version (M121) mounted in the M1064 mortar carrier. The mortar has a maximum range of 7200 meters with a minimum range of 200 meters. The M120 is fielded and fielding of M121 continues through Sep 98. The 120-mm mortar family of ammunition will consist of the M933 high explosive (HE) with the M745 point detonating fuze for training; the Precision Guided Mortar Munition (PGMM) and the M934 High Explosive round with the M734E1 MOF for war stocks. Also, the family will contain the M929 smoke round with the M734 MOF and an M930 Illumination round with a M776 mechanical super quick fuze. Production is ongoing for all BMS ammunition except the XM930 illumina-

tion round which is scheduled for release in FY99. (POC: MAJ Carroll/ATCD-ML/DSN: 680-5854/e-mail: CARROLLE@monroe.army.mil)

### **M30 Mortar Ballistic Computer (MBC):**

The M30 Mortar Ballistic Computer will replace the current M23 Mortar Ballistic Computer. The M30 MBS is a lightweight, battery powered, portable computer which accommodates all ammunition and fuse combinations to calculate fire control information necessary to lay and fire all Army mortar systems. The M30 provides digital communication via the Advanced Field Artillery Tactical Data System (AFATDS). Funding for FP1 and part of FP2 only. FUE for the MBC is scheduled for 2QFY98. (POC: MAJ Carroll/ATCD-ML/DSN:680-5854/e-mail: CARROLLE@monroe.army.mil)

### **Mortar Fire Control System (MFCS):**

The MFCS is an Automated fire control system that includes Position-Navigation System to allow for accurate weapon location, the ability to disperse the weapon systems, and employ "shoot and scoot" tactics. Key components of the MFCS are the fire control computer, global positioning system, and a direction determining device, collimator, and a dedicated secure radio net. An on-board Pointing System provides a precision mortar tube pointing reference, which is not subject to magnetic aberrations, and eliminates the need to dismount the vehicle. The Digital Communications and on-board Fire Control Computer digitally integrates the mortars into the field artillery fire support system (AFATDS), and increases the speed and accuracy required to support a fast moving, highly fluid future battlefield. The Fire Direction Center will utilize the same technology, minus the on-board Pointing System, to communicate with the MFCS. The MFCS will horizontally integrate new and existing technologies to increase responsiveness, lethality, survivability, and mobility. MFCS allows mortars to be widely dispersed across the battlefield, and provides mortar squads the capability to conduct semi-autonomous operations without dismounting. Program is unfunded. (POC: MAJ Carroll/ATCD-ML/DSN: 680-5854/e-mail: CARROLLE@monroe.army.mil)

### **Three Fuze Families:**

The Three Fuze Families, consists of the M734A1 Multi-Option Fuze (MOF), the M745 Point Detonating Fuze (PDF), and an Electronic Time fuze. The Three Fuze Family will replace all other mortar fuzes for all calibers of mortar ammunition. The M734A1 MOF is set by hand and has dual safe and arming. The M745 PDF is essentially a M734 MOF with substituted electronics for the delay detonator. The M745 PDF is fielded. The M734A1 MOF is in initial

production. The Electronic time fuze program is unfunded. (POC: MAJ Carroll/ATCD-ML/DSN:680-5854/e-mail:CARROLLE@monroe.army.mil)

### **Improved Bradley Acquisition System:**

IBAS is part of the Bradley A3 program and will upgrade current TOW II target acquisition and fire control subsystem. The focus of IBAS is to increase target acquisition and engagement ranges, while retaining the capability to fire all configurations of the TOW missile. It leverages hardware and software commonality Improved Target Acquisition System (ITAS). Over 40% of the IBAS hardware and 80% of the software are common to ITAS. IBAS provides 2nd Gen Forward Looking Infrared (FLIR) target acquisition for the gunner as well as commander in the Commander's Independent Viewer (CIV). It includes an integrated day / night sight, eyesafe laser range finder, automatic boresight and will increase the probability of hit out to the 25MM and TOW maximum ranges. The IBAS is composed of a target acquisition subsystem (TAS), missile control system (MCS), and modified TOW missile launcher (TML). (POC: MAJ Carroll/ATCD-ML/DSN: 680-5854/e-mail:CARROLLE@monroe.army.mil)

### **Up-Armored HMMWV (M1114):**

Vehicle will be produced in a Battalion-level Scout variant. System possesses increased ballistic protection against small arms fire, artillery airburst, small antipersonnel mines, antitank mines and unexploded artillery submunitions for the crew compartment. The integrated fixes to the Limited User Test (6-27 Mar 98) vehicles were completed during the Sep-Nov 97 time frame. Phase II Technical Tests (Oct 97-Feb 98) were conducted on all three vehicles operating at the 30/30/40 mission profile (achieved 2560 miles MTBOMF). The Operational Test Readiness Review III will take place on 6 Mar 98 and the LUT report is due 1 Jul 98. M1114 IOT&E is scheduled for 2nd/3rd Qtr FY99. FUE 1st Qtr/FY01. (POC: MAJ Bailey/ATCD-MH/DSN 680-2980/e-mail:BAILEYC@monroe.army.mil)

### **Long Range Advanced Scout Surveillance System (LRAS3):**

The LRAS3 system will provide the Maneuver Commander's timely, accurate 2nd GEN FLIR technology battlefield information from his Battalion Scout Platoons. The LRAS3 is a Battalion-level HMMWV Scout 2nd GEN FLIR target acquisition system that will provide day, night, all weather target acquisition that will allow the Scouts to identify and acquire enemy targets outside the enemies engagement ranges. LRAS3 is a 2nd GEN FLIR technology with Laser Rangefinder (LRF), Daylight TV, a desired Chemical Detection ability



and has P3I Compatibility. Six LRAS3 EMD units will be delivered in 4th QTR FY98 for initial test and evaluation. IOT&E is tentatively scheduled for 3rd/4th QTR FY99. FUE 3rd Qtr/FY01. (POC: MAJ Bailey/ATCD-MH/DSN 680-2980/e-mail: BAILEYC@monroe.army.mil)

#### **Multiple Launch Rocket System (MLRS):**

MLRS is an indirect fire, free-flight rocket system designed to deliver large volumes of fire in a short time against critical, time-sensitive targets. It provides an all-weather capability to attack threat indirect fire systems, air defense systems and light materiel/personnel targets out to a range of 32km. The system features disposable rocket launch pod/containers (two per launcher load) which are factory loaded with six rockets each and serve as shipping and storage containers as well as launching tubes. All emplacement, firing and displacement tasks at the launcher are performed from within the launcher cab by the three-man crew. The M26 free-flight, single stage, solid propellant rocket is 9 inches in diameter, 155 inches long, and contains 644 M77 Dual Purpose Improved Conventional Munition (DPICM) submunitions. Each M77 DPICM antipersonnel/anti-materiel submunition features a prescored steel case for fragmentation (approximately 200) and a shaped-charge for armor penetration (3 to 4 inches RHA). The MLRS M270 launcher is a tracked, self-propelled, stretched derivative of the Bradley Fighting Vehicle chassis with on-board navigation and an automated fire control system. Since FY89 all production launchers have incorporated modifications required to fire the Army Tactical Missile System (Army TACMS) Block I missile and previously fielded launchers have been retrofitted with the same modifications. All M270 launchers will undergo fire control system, hydraulic system and mechanical systems modifications designed to mitigate electronic obsolescence, reduce operation and support (O&S) burdens, improve built-in diagnostics, accommodate the needs of developmental munitions and provide growth potential for future improvements. When applied, these modifications, the Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) will result in the M270A1 launcher. Basic MLRS achieved initial operational capability in FY83. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Multiple Launch Rocket System Extended Range Rocket (ER-MLRS):**

An evolution of the current M26 Dual Purpose Improved Conventional Munition (DPICM) rocket, ER-MLRS is a free-flight, single stage, solid propellant rocket capable of delivering a variety of conventional munitions to significantly greater

ranges than the M26 rocket. ER-MLRS is designed to provide greater operational flexibility to the force by providing expanded cross boundary fires capability and enabling more continuous fires during rapid-paced offensive operations. During defensive operations it will improve a force's survivability through the ability to range enemy long-range cannon and rocket artillery systems. The base-line ER-MLRS warhead will contain DPICM submunitions. Range of the rocket will be increased 50 percent over the current DPICM rocket to approximately 45km. The additional range is accomplished by decreasing the number of submunitions (518 vs 644) and increasing the length of the rocket motor (about 10 inches). Integration of ER-MLRS will incorporate accuracy and submunition reliability enhancements as well. A zero-force detent mechanism will replace the current shear pins that retain the rockets in the launch tubes contributing to increased accuracy. Use of the XM85 DPICM submunition with a self-destruct fuze feature vice the current M77 submunition will reduce the hazardous submunition dud rate to one percent or less. Only a minimum number of ER-MLRS, approximately 4000, will be produced in order to keep the rocket production line warm until Guided MLRS rocket Low Rate Initial Production is initiated in FY01. FUE FY99. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Multiple Launch Rocket System Guided Rocket (GMLRS):**

A modification of the baseline Extended Range Rocket (ER-MLRS), GMLRS is an inertially-guided, single stage, solid propellant rocket capable of delivering a variety of conventional munitions to significantly greater ranges with much greater accuracy than either the basic M26 or the ER-MLRS free-flight rockets. The baseline GMLRS with Dual Purpose Improved Conventional Munition (DPICM) warhead will provide division and corps commanders the organic capability to attack threat air defense systems, fire support systems, and light materiel/personnel targets at extended ranges with significantly fewer rockets versus free-flight rocket munitions. Firing fewer rockets means less time on the firing point or fewer launchers required to fire which will enhance launcher/unit survivability. In addition to decreasing logistical burdens and enhancing survivability, increased accuracy will increase effectiveness against point targets and reduce collateral damage. GMLRS will be fired from MLRS M270A1 or High Mobility Artillery Rocket System (HIMARS) launchers. Payload will be 409-465 XM85 DPICM submunitions. Maximum range will be 60-70km with a minimum range of 10-15km. A low cost, jam-proof, inertial guidance system with canard control will achieve 2-3 mil accuracy over the entire

range band. The increase in range over the ER-MLRS will be achieved through a combination of reducing warhead weight (fewer submunitions), capitalizing on increased lift contributed by the control canards and utilizing the same long burn rocket propellant as the Army Tactical Missile System. FUE FY03. (POC: Mr. Hurst/ATCD-MD/DSN680-2178/e-mail:HURSTJ@monroe.army.mil)

#### **Multiple Launch Rocket System (MLRS) Smart Tactical Rocket (MSTAR):**

MSTAR will be an inertially-guided, single stage, solid propellant rocket capable of delivering smart, multi-capable submunitions to significantly greater ranges with much greater accuracy than either the basic M26 or the Extended Range MLRS free-flight rockets. A modification to the baseline MLRS Guided Rocket (GMLRS), the MSTAR program will integrate smart, multi-capable submunitions into the warhead, but utilize the same guidance and control section and rocket motor. The MSTAR will provide division and corps commanders an organic, fire-and-forget, multiple engagement capability to attack a wide variety of high value counterfire, air defense and maneuver targets, to include "shoot and scoot" multiple rocket launchers and tactical ballistic missile transporter-erector launchers (TEL), at tactical depths without expending critical, long range missile assets. MSTAR will be fired from MLRS M270A1 or High Mobility Artillery Rocket System (HIMARS) launchers. Payload will be one to four smart, multi-capable submunitions and maximum range over 50km. A low cost, jam-proof, inertial guidance system with canard control will achieve 2-3 mil rocket accuracy over the entire range band. Submunitions will be capable of detecting, attacking and defeating hard or soft, hot or cold and moving or stationary vehicular targets in near all weather, day or night. Candidate submunitions are Sense and Destroy Armor Product Improvement (SADARM PI) and BAT Preplanned Product Improvement (BAT P3I). FUE FY08. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Army Tactical Missile System (Army TACMS) Block I:**

Army TACMS Block I is a conventional, long range, surface-to-surface, guided, semi-ballistic missile with an antipersonnel, antimateriel (APAM) warhead. Army TACMS missiles will be deployed within the ammunition loads of corps Multiple Launch Rocket System (MLRS) battalions, and fired from MLRS M270, Improved Position Determining System (IPDS) interim M270, M270A1 or High Mobility Artillery Rocket System (HIMARS) launchers. The single stage, solid propellant Block I missile is a certified round of ammunition, each factory-loaded into a single launch pod/container compatible with

the MLRS. Guidance is inertial, utilizing a ring laser gyro and is totally autonomous after launch. The Block I is 23.9 inches in diameter, 156.5 inches long and delivers 950 M74 APAM grenades to a maximum range of 165km. Each baseball sized M74 blast/fragmentation APAM grenade weighs approximately 1.3 pounds, utilizes Comp B explosive and is designed to produce 1200 four grain tungsten alloy fragments. Pyrophoric pellets add an incendiary capability. Army TACMS Block I achieved first unit equipped in Sep 90 in units deployed to Saudi Arabia for Operation Desert Shield. Full-rate production ended with final missile deliveries in Jul 97. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Army Tactical Missile System (Army TACMS) Block IA:**

A modification of the currently fielded Army TACMS Block I missile, Army TACMS Block IA will be a conventional, long range, surface-to-surface, guided semi-ballistic missile with an antipersonnel, antimateriel (APAM) warhead. The Block IA missiles will be deployed within the ammunition loads of corps Multiple Launch Rocket System (MLRS) battalions, and fired from Improved Position Determining System (IPDS) interim M270, M270A1 or High Mobility Artillery Rocket System (HIMARS) launchers. The single stage, solid propellant Block IA missile will be a certified round of ammunition, each factory-loaded into a launch pod/container compatible with the MLRS. Block I guidance is inertial, utilizing a ring laser gyro and is totally autonomous after launch. The block IA missile will incorporate a global positioning system (GPS) receiver as well, to update missile position in flight and increase accuracy to maintain effectiveness at greater ranges. It will be 23.9 inches in diameter, 156.5 inches long and deliver approximately 300 M74 APAM grenades to a maximum range in excess of 300km. Each baseball sized M74 blast/fragmentation APAM grenade weighs approximately 1.3 pounds, utilizes Comp B explosive and is designed to produce 1200 four grain tungsten alloy fragments. Pyrophoric pellets add an incendiary capability. FUE FY98. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Army Tactical Missile System (Army TACMS) Block II:**

Army TACMS Block II is a conventional, long range, surface-to-surface, guided, semi-ballistic missile. It is the integration effort between the Army TACMS Block IA missile and the BAT Brilliant Antiarmor Submunition. Block II missiles will be deployed within the ammunition loads of corps MLRS battalions and fired from Improved Position Determining System (IPDS) interim M270, M270A1 or High

Mobility Artillery Rocket System (HIMARS) launchers. The propulsion, guidance, and control sections for the Block II missile will remain the same as for the Block IA. Guidance algorithms, however, will be altered to support the BAT submunitions. The Block IA warhead will be modified to carry and dispense 13 BAT submunitions to a maximum range of 140km. BAT is an unpowered, gliding, terminally-guided, top attack antiarmor submunition designed to locate, attack, and kill moving armored combat vehicles including tanks and fighting vehicles. Each BAT submunition is 36 inches long, 5.5 inches in diameter and utilizes dual seekers, acoustic/infrared, and a conventional tandem shaped charge kill mechanism. Later production units of the Block II will incorporate BAT P3I submunitions instead of basic BAT. BAT P3I is an improved BAT submunition with improved performance in reduced visibility, the ability to attack stationary (cold) targets as effectively as moving (hot) targets and a capability against surface-to-surface missile launchers. FUE FY01. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Army Tactical Missile System (Army TACMS)**

##### **Block IIA:**

Army TACMS Block IIA is a conventional, long range, surface-to-surface, guided, semi-ballistic missile. It is the integration effort between the missile developed under the Block IA program and the BAT P3I submunition. Block IIA missiles will be deployed within the ammunition loads of corps Multiple Launch Rocket System (MLRS) battalions, and fired from Improved Position Determining System (IPDS) interim M270, M270A1 or High Mobility Artillery Rocket System (HIMARS) launchers. The propulsion, guidance, and control sections for the Block IIA missile will be the same as those for the Block IA missile. The single stage, solid propellant Block IIA missile will be a certified round of ammunition, each factory-loaded into a single launch pod/container compatible with the MLRS. It will be 23.9 inches in diameter, 156.5 inches long and deliver at least six BAT P3I submunitions to a maximum range of 300km. BAT P3I is an improved BAT submunition with improved performance in reduced visibility, the ability to attack stationary (cold) targets as effectively as moving (hot) targets, and a capability against surface-to-surface missile launchers. BAT P3I provides the capability to effectively attack imprecisely located cold/sitting targets and critical, short dwell time, mobile/moving targets at operational ranges. FUE FY05. (POC: Mr. Hurst/ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **High Mobility Artillery Rocket System (HIMARS):**

HIMARS is a more strategically deployable indirect fire rocket/missile system than the current Multiple Launch Rocket System (MLRS), designed to provide contingency forces the rapid fire, high volume, long range fire support of the MLRS. HIMARS will utilize a wheeled rocket launcher capable of firing the complete MLRS family of munitions as currently packaged. The launcher will be able to drive on/drive off C-130 and larger cargo aircraft, fully combat loaded and in operational configuration. The range, lethality, effectiveness, response times and reload times will be the same as those currently achieved with the M270 MLRS launcher. The fire control and communication systems/ capabilities will interoperate and be compatible with the current MLRS. FUE FY08. (POC: Mr. Hurst/ ATCD-MD DSN 680-2178/e-mail: HURSTJ@monroe. army.mil)

#### **M898 Sense and Destroy Armor (SADARM)**

##### **155mm Projectile:**

SADARM is a fire-and-forget smart munition designed to enhance the counterbattery capability of the fire support system and to ease the logistical burden of field artillery ammunition resupply. It is intended primarily for use against stationary self-propelled howitzers in firing position, but has the capability to attack and defeat other moving or stationary armored combat vehicles as well. SADARM is a system wherein target sensing submunitions are delivered over a target area by an artillery projectile and expelled. The submunitions descend by parachute and when a target is identified within the sensor scan area an explosively-formed penetrator is fired into the target. Each SADARM projectile contains two 5.8 inch diameter submunitions and is packaged, handled, maintained and fired the same as current 155mm HE projectiles. Maximum range from current 155mm howitzers is 22.5km. The SADARM submunitions are fire-and-forget, sensor-fuzed top attack submunitions utilizing dual-mode millimeter wave/infrared sensors and explosively-formed penetrator lethal mechanisms. The search pattern of each individual submunition is a circular spiral of decreasing diameter. Overlapping and adjacent submunition footprints provide adequate coverage of the target area. FUE FY99. (POC: Mr. Hurst/ ATCD-MD/DSN 680-2178/e-mail: HURSTJ@monroe.army.mil)

#### **Patriot Advanced Capability-3 (PAC-3).**

Patriot is a high/medium altitude advanced surface-to-air guided missile air defense system. PAC-3 is a major upgrade to the Patriot system. The PAC-3 Operational Requirements Document (ORD) represents the Army Air Defense need to buy back required battlespace lost against the current and

evolving tactical missile and air breathing threat. PAC-3 is needed to counter/defeat/destroy the 2008 threat and to extend Patriot's capabilities to accomplish new/revised missions. The PAC-3 Program consists of two interrelated acquisition programs - The PAC-3 Growth Program and the PAC-3 Missile Program. The Growth program consists of integrated, complementary improvements that will be implemented by a series of phased, incrementally fielded material changes. The PAC-3 Missile program is a key component of the overall improvements of the Patriot system, it will provide essential increases in battlespace, accuracy, and kill potential. The updated PAC-3 ORD was approved by CDR TRADOC on 11 Mar 97. HQDA approved the initial PAC-3 ORD 30 Jul 92. The PAC-3 program received ASARC MS II/IV approval in Dec 93 and DAB approval in Feb 94. The PAC-3 Missile LRIP DAB is tentatively scheduled for 4th QTR FY98. (Mr. Woolever/ATCD-MD/DSN680-2932/e-mail: WOOLEVE2@monroe.army.mil).

#### **Theater High Altitude Area Defense (THAAD).**

THAAD is an air defense weapon system to counter the tactical/theater class ballistic missiles. THAAD will provide wide area protection for theater critical assets to include geopolitical population targets, ports, and industrial sites, as well as conventional military forces and assets. THAAD provides an upper tier defense zone above the engagement altitudes of the Patriot system. A THAAD User Operational Evaluation System (UOES) is currently being developed in the Program Definition and Risk Reduction (PDRR) phase. The UOES is scheduled to undergo an extensive flight and system test program and be available for deployment in the event of a national emergency. The THAAD UOES will be delivered at the end of the PDRR phase and will include: 40 missiles, 4 launchers, 2 Radars, 2 BM/C3I elements, and the associated ground support equipment. THAAD received ASARC MS-1 approval on 4 Oct 92 and DAB MS-I approval on 21 Jan 92. The HATMD MS-I Operational Requirement Document (ORD) was approved by TRADOC 3 Dec 92, and HQDA 22 Jan 92. The THAAD MS-II ORD, with final revisions, was approved by TRADOC on 27 Oct 97, and received JROC validation on 15 Jan 98. An MS-II MDR is expected in mid 1999. (Mr. Woolever/ATCD-MD/DSN680-2932/e-mail:WOOLEVE2@monroe.army.mil).

#### **Joint Tactical Ground Station (JTAGS).**

JTAGS is a multi-service ACAT III NDI program. JTAGS is a transportable information processing system which can receive and process in-theater, direct down-linked data from Defense Support Program sensors and disseminate warning, alerting and cueing information on Tactical Ballistic Missiles

(TBM) and other tactical events of interest throughout the theater using existing communications networks. JTAGS supports all pillars of Theater Missile Defense. A unit will include a JTAGS ISO 20-foot shelter to house operators and equipment, external collapsible high gain antennas, a standard military generator, and standard 5 ton trucks as prime movers. JTAGS is transportable by air, sea, and over improved roads. The JTAGS crews are made up of joint Army/Navy teams. Fielding of JTAGS was completed in 1997. Currently, JTAGS is in the first phase of a two-phase improvement program. Phase I will enhance joint communications and the system's ability to predict both the launch and impact points of TBMs. Phase II, scheduled from FY99 to FY04, will enable JTAGS to be compatible with the next generation of space-based infrared satellites. (Mr. Woolever/ATCD-MD/DSN680-2932/e-mail:WOOLEVE2@monroe.army.mil).

#### **Air and Missile Defense Planning and Control System (AMDPCS).**

The AMDPCS provides a common, integrated, digitized, air defense command & control capability to the entire air defense force (battery through theater) as well as joint force command and control elements, such as the Battlefield Coordination Element (BCE). It provides Air Defense Artillery (ADA) brigades with a Fire Control System (FCS) for monitoring and controlling Engagement Operations (EO) information with subordinate air defense battalions. Additionally, it provides the Air and Missile Defense Workstation (AMDWS), a common defense planning and situational awareness tool that allows sharing of vital Force Operations (FO) information with all air defense forces from battery to theater level. The AMDPCS will integrate AMD sensors, weapons and C3I capabilities with those of higher echelon, adjacent and subordinate units into a cohesive, synergistic system capable of minimizing fratricide, protecting the force and defeating/neutralizing the air and missile threat. AMDPCS is an ACAT III level program. The AMDPCS ORD was approved by TRADOC 19 May 1997. Acquisition of the AMDPCS (BDE level) is based on cost sharing by Brigades and additional funds provided by PEO AMD. (Mr. Woolever/ATCD-MD/DSN 680-2932/e-mail: wooleve2@monroe.army.mil).

#### **SHORT RANGE AIR DEFENSE (SHORAD):**

SHORAD (formerly referred to as Forward Area Air Defense, or FAAD) consists of the Stinger-based Avenger and Bradley Stinger Fighting Vehicle (BSFV), Man-Portable Air Defense (MANPADS), and the FAAD C3I systems. SHORAD is undergoing modernization: BSFV is being upgraded into an enhanced version called Linebacker, and will become a digitized fire unit which can fire on the move and

no longer require gunners to dismount for firing; this eliminates mobility and survivability problems with the current vehicle. Linebacker FUE: FY98 (pending funding). Avenger will be further digitized with a slew-to-cue capability that automates the linkage between FAADC3I and the weapon fire control, allowing quicker acquisition and engagement of fleeting targets such as cruise missiles and pop-up helicopters. Slew-to-cue FUE: FY98 (pending funding). MANPADS teams will continue to operate with Avengers in light forces and in reserve units. FAADC3I will receive upgraded software and the new Ground Based Sensor, or Sentinel, which will institute the first digitization of divisional airspace. Sentinel fielding began in FY97. (Mr. Ebner/ATCD-MD/DSN680-2948/e-mail:EBNERJ@monroe.army.mil)

#### **Joint Tactical Terminal (JTT):**

The JTT will replace the Commanders' Tactical Terminal (CTT) beginning in FY00. Both the JTT and CTT provide dedicated communications for the rapid dissemination of perishable intelligence to aviation, artillery, air defense, and maneuver; and command and control nodes; and intelligence centers at all echelons from Army, Navy, and Air Force intelligence, surveillance, and reconnaissance platforms and national centers and systems. Perishable reporting is accomplished via ultra-high frequency relays located on airborne platforms and satellites. (POC: Mr. Helderma/DSN680-3273/e-mail:helderma@monroe.army.mil)

#### **Guardrail Common Sensor (GRCS):**

GRCS is a Corps/Echelon Above Corps airborne intelligence, surveillance, and reconnaissance system capable of detecting, acquiring, identifying, and accurately locating high-payoff command, control, communications, computers, and intelligence targets and weapon systems to at least 350kms forward of the airborne platform. Location accuracies are within target location error specifications for Army ATACMS/ER-ATACMS/MLRS. Time-critical reporting (sensor-to-shooter/command and control [C2]) is accomplished via the Commanders' Tactical Terminal/Joint Tactical Terminal to Army aviation, air defense artillery, and maneuver command and control and execution nodes, as well as Marine Corps, Navy (ashore/afloat, airborne) and Air Force C2 and intelligence nodes. (Mr. Helderma/DSN 680-3273/e-mail:helderma@monroe.army.mil)

#### **All Source Analysis System:**

A mobile, automated intelligence processing, fusion, and dissemination system designed to provide timely, accurate, and relevant all source intelligence and targeting support to battle commanders (battalion through EAC). ASAS Block I is now fielded to all

active component corps/ divisions. Currently, the ASAS-Extended is fielded to I Corps, III Corps, XVIII Airborne Corps, USFK, PACOM, and CENTCOM. Testing of ASAS Block II software capability package single source will begin in 3QFY97.(POC: Mr. Hurst/DSN 680-4347/e-mail: hurstj1@monroe.army.mil)

#### **"Hunter" Joint Tactical Unmanned Aerial Vehicle (JT-UAV) System:**

Hunter JT-UAV systems have been fielded to III Corps and Fort Huachuca. The III Corps system (15th MI Bn) provides both corps deep support and acts as a surrogate Outrider Tactical UAV (TUAV) for maneuver brigades and divisions supporting Force XXI activities. Hunter production was halted at the end of delivery of seven low-rate production systems (Dec 95). Deep reconnaissance, surveillance, and target acquisition capability include 250+-km range, 8+-hour mission time, day/night, limited all-weather, real-time imagery using a forward-looking infrared radar/television (FLIR/TV) sensor. Future payloads may include communications relay, moving target indicator (MTI) radar, minefield detection, and electronic jamming. Hunter was planned as the first of a family of joint service UAVs. This family of UAVs will include Predator Medium Altitude Endurance, Global Hawk High Altitude Endurance, and Dark Star Low-observable High Altitude Endurance UAV at JTF/EAC level, as well as Outrider TUAV (previously Close Range/Maneuver) at maneuver brigade, cavalry regiment, and light infantry division. XVIII Airborne Corps has requested two Hunter systems, and III Corps has requested a second system. The CSA has not approved fielding these additional systems. Except for a system to support training at Fort Huachuca, the remaining five systems are in storage in Sierra Vista, Arizona. (POC: Mr. Undercoffer/DSN 680-3274/e-mail: undercoj@monroe.army.mil)

#### **"Outrider" Tactical UAV (TUAV):**

On 2 May 96 a 24-month ACTD was initiated to develop the joint services' Outrider TUAV system. An Army system will be delivered to Fort Huachuca for training and to Fort Hood for unit operational test and evaluation. Fielding of first system is to Ft Hood is planned for 2 Mar 98. Outrider will be the maneuver brigade commanders' direct support confirming sensor employing EO/IR sensors. Outrider requirements stem from the Close Range ROC and the Joint Maneuver ORD, with modifications by the JROC. The Army plans to acquire 38 Outrider TUAV systems—three to each heavy division, four to each light division and two to each ACR (active component only). The ACTD has been extended to end 30 Jun 98, following a 4-month military utility assessment starting in Mar. (POC: Mr. Undercoffer/ DSN 680-3274/e-mail: undercoj@monroe.army.mil)

#### **Intelligence and Electronic Warfare Common Sensor (IEWCS) System:**

The IEWCS System consists of the Ground Based Common Sensor-Light/Heavy and Advanced QUICKFIX (GBCS-L/H & AQF). The IEWCS, a division-level SIGINT system, provides targeting, detection, identification, electronic attack, and location reports in near real time to division and brigade commanders. It is designed to pass targeting data to TACFIRE in support of a "quickfire" or sensor-to-shooter link. The GBCS-L/H ranges are extended beyond the FLOT by use of the AQF aerial platform that interoperates with the GBCS-L/H. The IEWCS provides highly accurate location data via its precision location subsystems. All the subsystems mounted on the three different platforms are the same. The GBCS-L IOT&E is scheduled for 3QFY98; the GBCS-H and the AQF IOT&E are scheduled for 4QFY99. The GBCS-L first unit equipped is 2QFY99. (POC: Mr. Floyd/DSN 680-3667/e-mail: floydw@monroe.army.mil)

#### **Aerial Common Sensor (ACS):**

The ACS program—a Corps level system—will be the replacement for the Guardrail Common Sensor and Airborne Reconnaissance Low, airborne intelligence, surveillance, and target acquisition systems. It will be capable of worldwide self-deployment, immediately capable of beginning operations when arriving in theater using an aircraft-to-satellite relay, back to the ground processing facility located at the main operating base. ACS will be capable of carrying a mix of SIGINT, IMINT, and MASINT payloads to detect, classify, accurately locate, track, and rapidly disseminate time-sensitive data to warfighters at all echelons. ACS ORD was approved on 14 Oct 97. (POC: Mr. Helderma/DSN680-3273/e-mail:heldermc@monroe.army.mil)

#### **Joint Surveillance Target Attack System (Joint STARS):**

Joint STARS consists of Air Force E-8C aircraft and Army ground station modules (GSM)/common ground station (CGS). The E-8C collects moving target indicator and synthetic aperture radar data using a multi-mode radar. The GSM/CGS receives, analyzes, and disseminates radar imagery from the E-8C and other sensors. It supports intelligence and targeting functions with near real time interactive displays. Joint STARS has been deployed twice in support of Operation Joint Endeavor and to Korea. The third production aircraft was delivered to the 93rd ACW, and IOC was attained 1QFY98. The CGS is the objective ground station. The CGS ORD was approved 1QFY98. The CGS IOT&E is scheduled for Mar 98. (POC: MAJ Kevin Stewart/DSN680-4269/e-mail: stewartk@monroe.army.mil)

#### **Enhanced Tactical Radar Correlator (ETRAC):**

ETRAC is a mobile ground processor for receiving advanced synthetic aperture radar system (ASARS) data from U2R aircraft via a direct data downlink. ETRAC provides ASARS imagery to the Modernized Imagery Exploitation System for exploitation, as well as situation and target development. ETRAC is C-130 self-deployable. V and XVIII Corps each have an ETRAC. No further systems are scheduled for production. The Tactical Exploitation System will replace ETRAC at time to be determined. POC: Mr. Waller/DSN 680-3441/e-mail wallerj@monroe.army.mil)

#### **Tactical Exploitation System (TES):**

The TES migrates four major Tactical Exploitation of National Capabilities (TENCAP) systems into one tactically tailorable system. The TES will allow operators and analysts to receive imagery and signals intelligence from national and theater sources and, then, analyze, exploit, correlate, process, and transmit reports and products from same. Requirement is for six systems, one per corps and EAC power projection MI Brigade. First system scheduled for XVIII Airborne Corps in FY99. (Mr. Waller/DSN 680-3441/e-mail wallerj@monroe.army.mil)

#### **Integrated Meteorological System (IMETS):**

IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effects forecasts, observations, and decision aid information to multiple command elements at echelons where USAF Weather Teams provide weather support to the Army. IMETS is an Army-furnished system (standard shelter/vehicle, common hardware/ software, and communications) that is operated by USAF personnel and maintained within planned Army support for system components. The program is currently in the EMD phase of the acquisition cycle and will go directly from this phase to the production of the Block III systems, with fielding currently scheduled for 2QFY99. (POC: Mrs. Hanks/DSN 680-4077/e-mail: hanksj@monroe.army.mil)

#### **Digital Topographic Support System/Quick Response Multicolor Printer (DTSS/QRMP):**

The DTSS/QRMP program combines two separate systems into one downsized system. DTSS/QRMP is capable of receiving, (re)formatting, creating, storing, retrieving, updating, merging, and manipulating digital topographic data, as well as hard copy reproduction of topographic products. The system provides the theater commander and his staff automated and integrated terrain products to enhance and compress the decision-making process across the

operational continuum. A recently approved change to the DTSS/QRMP ORD authorizes fielding of the system down to brigade level vice division level as in the original ORD. (POC: Mrs. Hanks/DSN 680-4077/e-mail: hanksj@monroe.army.mil)

#### **C-17 Globemaster III Cargo Aircraft:**

Thirty-eight C-17s have been delivered to the Air Force's Air Mobility Command. The operational fleet currently consists of 30 C-17s at Charleston Air Force Base (AFB), South Carolina in the 437th Airlift Wing. Of these aircraft, three C-17s are in depot modification. Eight C-17s are at Altus AFB, Oklahoma to support training. The prototype C-17 is at Edwards AFB, California to support follow on flight-testing. The Air Force plans to station 48 at Charleston AFB, 8 at Altus AFB, at least 48 C-17s at McChord AFB, Washington, 6 at Jackson, Mississippi reserve base, and keep 10 as backup aircraft. In addition, the Air Force is currently working to put 15 additional aircraft in the Program Objective Memorandum for Special Operations Forces. (Mr. Sova/DSN 680-3005/e-mail: Sovaj@monroe.army.mil)

#### **Army Pre-Positioned Afloat (Army War Reserve-Three):**

AWR-3 includes sustainment supplies and equipment for a contingency corps, a humanitarian effort, a combat brigade, and a port opening capability. Supplies include all classes needed to sustain deployed contingency corps units up to C+30. Humanitarian support and port opening ships provide watercraft, trucks, forklifts, cranes, container handlers, food, and shelter items. Combat brigade ships have equipment and 15 days of sustainment supplies for 2 mechanized and 2 armor battalions. The Combat Brigade Afloat is on station and ready for deployment. (Mr. Sova/DSN 680-3005/e-mail: Sovaj@monroe.army.mil)

#### **Airborne Master Action Plan (AMAP):**

The AMAP is developed by the Army Airborne Airlift Action Office (AAACO) at HQ TRADOC. The AMAP was developed by the AAACO in response to the need for a single document to consolidate the efforts of the airborne/airlift community for the coordination and resolution of issues and future combat developments. The AMAP is updated and published twice each year for distribution at the Airborne General Officer In Process Review (GO IPR). This document provides field commanders with POC's and the status of priority issues. The AAACO POC for the AMAP is MAJ Mark Acker or CPT A J Kozar at DSN 680-2469/3921. Our address is HQ TRADOC, ATTN: ATCD-SL, Fort Monroe, VA 23651-5194. We can be reached via e-mail at (ackerm@monroe.army.mil or kozara@monroe.army.mil).

#### **Family of Medium Tactical Vehicles (FMTV):**

FMTV is a family of medium tactical trucks sharing common design and components with two payload classes: 2-1/2 tons and 5 Tons. The family will be the replacement for the current over aged 2-1/2-ton truck series and the current aging 5-ton truck fleet. It will provide ground transport for personnel, cargo, and weapons systems. FMTV provides significantly increased reliability, decreased operations and support costs, and improved off-road mobility. The first unit was equipped in January 1996 in the 82nd Airborne Division. In FY96, the FMTV began fielding to the 101st Air Assault Division. Fielding continues to Ft. Bragg and Ft. Campbell through FY98. In Feb 97, FMTV began fielding to the TRADOC training base and will continue fielding into FY99. In Jun 97 FMTV began fielding to Ft. Drum, and Ft. Stewart and will continue into FY99. In FY98, FMTV will start fielding to Ft. Hood, Ft. Carson, Ft. Lewis, and Korea and continue into FY99. (Mr. Clapp/DSN 680-2609/e-mail: Clappt@monroe.army.mil)

#### **All Terrain Lifter, Army System (ATLAS):**

The ATLAS is a 10,000 lb. (10K) rough-terrain, variable reach forklift. The ATLAS will be a one-for-one replacement for the current obsolete, overage rough terrain 10K (LIN T49119) in aviation, engineer, medical, ordnance, transportation, and supply units. Unlike the current 10K forklift, ATLAS can safely lift 10,000 LB 463L pallets and unstuff these pallets from 20-foot containers. The commercially designed ATLAS is easier and less costly to support. The ATLAS is scheduled to begin fielding to the 82nd Airborne Division and the 10th Infantry Division in Jan 98, the 101st Air Assault Division and the 24th Infantry Division in Feb 98, and the 1st Cavalry Regiment and the 3rd Armored Cavalry Regiment in 3QFY 98. Fielding to those units will continue through 4QFY99. (Mr. Clapp/DSN 680-2609/e-mail: Clappt@monroe.army.mil)

#### **Movement Tracking System (MTS):**

MTS as a component of the Palletized Load System – Enhanced (PLS-E) was chosen as a Warfighting Rapid Acquisition Program (WRAP) in FY97 with fielding to begin in FY98. The MTS will be mounted on selected PLS trucks. MTS provides the capability to identify position, track progress, and communicate with the operators of the PLS. Through the use of positioning and communications satellites, MTS enhances transportation movement control of the PLS. CSS operations sections can determine the location of and communicate with these critical ammunition distribution systems. This allows, for the first time, positive control of assets, which permits time definite delivery of supplies and

services. Additionally, MTS is an inexpensive solution that does not tax the already over-burdened warfighter communications pipelines. MTS will be fielded to selected PLS in the III, V, and XVIII Corps, the 3rd and 4th Infantry Divisions, and the 1st Cavalry Division in FY98. It will be fielded to selected PLS in the V Corps, the 1st, 2nd, 3rd, and 25th Infantry Divisions, the 2nd and 3rd ACR, the 1st Armor Division, and the 82nd and 101st Divisions in FY99. Mr. Clapp/DSN 680-2609/e-mail: Clappt@monroe.army.mil)

#### **HERCULES (M88A2) Heavy Recovery Vehicle:**

The HERCULES (M88A2) is the Army's new Heavy Recovery vehicle and will replace the M88A1 in units with a 70 ton recovery requirement. The HERCULES system is capable of independently supporting all systems currently or planned for in the U.S. Army inventory, with emphasis on the Abrams-series Main Battle Tank (MBT) and other systems with vehicle weights up to 70 tons. The HERCULES system is capable of communicating via the Single Channel Ground/Airborne Radio System (SINCGARS). Additionally, smoke grenade launchers are installed on the front of the vehicle and a .50 caliber heavy barrel machine gun is mounted on top. The units that will use and support the M88A2 HERCULES will include Armor Battalions, Cavalry Squadrons, selected Engineer Battalions, and Direct Support Maintenance units. The skills required are no greater than those required for the M88A1 vehicle. System improvements consist of an upgraded power pack (engine and transmission), greater winch and hoist capacities, increased tow/braking capabilities and increased armor protection. The HERCULES includes additional weight (approximately 70 tons), an upgraded suspension, power-assisted brakes, and an improved hydraulic system. The HERCULES has an auxiliary power unit to operate no-load recovery components and impact tools without running the engine. Fielding began in FY97 and will continue based on availability of procurement funding. (MAJ Benda/DSN 680-2295/e-mail: Bendag@monroe.army.mil)

#### **Transportation Coordinators Automated Information Management System II (TCAIMS II):**

The TCAIMS II is the U.S. TRANSCOM, Joint Transportation Corporate Information Management (CIM) Center (JTCC) directed DoD transportation system that replaces the US Army's TC ACCIS deployment system, Department of the Army Movements Management System - Redesign 2 (DAMMS-R2) and Installation Transportation Office (ITO) CONUS Freight Management system (CFM). This system migrates from the USMC TCAIMS system, Air Force Cargo Movement Operating System (CMOS) and from pieces of the US Army's TC

ACCIS and DAMMS-R2 systems. The US Army is the lead development agency and has appointed a PM TCAIMS II under PEO-STAMIS/DISC4. The system is currently scheduled to begin fielding in 1st quarter FY99. The HQDA DCSOPS and DCSLOG have jointly chartered the Deployment Process Modernization Office (DPMO) at Fort Eustis/Ft Lee to develop the Army doctrine, training and requirements for deployment/redeployment to support fielding of this system. (Mr. Smith/ DSN 680-4288/e-mail: smithd4@monroe.army.mil)

#### **Global Combat Support System - Army (GCSS-Army) [formerly the Integrated Combat Service Support System (ICS3)]:**

The GCSS-Army will be the business automation enabler for the total Army and will constitute the Army portion of the Global Combat Support System (GCSS). GCSS-Army is an Army initiative to integrate/ interface non-C2 Combat Service Support (CSS) automation into an efficient, standard, coherent information system from factory to foxhole. The GCSS-Army will be the Army's automated information system (AIS) to modernize and integrate/ interface the capabilities of existing tactical STAMIS and wholesale/joint CSS systems. The full operational capability will provide the seamless, integrated, modular, interactive, and interoperable CSS automated information and execution system for the total Army. The integration effort is being steered by the GCSS-Army General Officer Working Group chaired by the CDR, TRADOC with the DCG, AMC as the Deputy chairperson. Fielding is scheduled to begin in 4th QTR FY 99. (Mr. Smith/DSN 680-4288/e-mail: smithd4@monroe.army.mil)

#### **Combat Service Support Control System (CSSCS):**

Provides the logistics commander and staff the ability to rapidly collect, analyze, and disseminate critical logistics, medical, financial and personnel information. CSSCS will provide timely situational awareness, force projection and course of action information to determine the capability to support current operations and sustain future operations. CSSCS has successfully passed IOT&E II conducted in Dec 96 and received approval by the ASARC. The ASARC granted the Type Classification 'Standard' for the hardware and allowed the program to enter into 'Full Production' and deployment. Fielding to III Corps was completed in 4QFY97. Fielding to XVIII Corps began in FY98 and is in progress. (Mr. Van Alstine/DSN 680-3019/E-mail: Vanalstp@monroe.army.mil)

#### **Aircraft Nondestructive Test Equipment (NDTE):**

NDTE will provide Army Aviation Maintenance with state-of-the-art commercial equipment capable of inspecting aircraft components and structures for



materiel defects/damage without aircraft disassembly. NDTE will greatly simplify inspection procedures, reduce time required to perform inspections and also be capable of inspecting composite materials found on modern Army aircraft. The NDTE program includes Eddy current, Ultrasonic, Harmonic Bond, and X-Ray test equipment. All divisional and non-divisional AVIM units will receive NDTE systems. Aviation Powertrain Repairman (MOS 68D) with an Additional Skill Identifier (ASI) of N2 are the designated operators of the NDTE equipment. The system is being fielded to all Aviation Intermediate Maintenance (AVIM) units in the Army. Fielding began in Dec 96 and will continue through Apr 98 when NDTE is fielded to all AVIM units. (Mr. Holm/DSN 680-2184/e-mail: Holms@monroe.army.mil)

#### **Integrated Family of Test Equipment (IFTE) Base Shop Test Facility (BSTF):**

The IFTE BSTF is Automatic Test Equipment (ATE) used at the Direct Support and General Support levels of maintenance, to test and isolate faults in weapon system line replaceable units (LRU) and shop replaceable units (SRU). It is designed for state-of-the-art testing of digital, hybrid, and RF electronics, including spread spectrum technology. The station is either housed in a standard Army S-280 shelter, forming the BSTF, or floor mounted in a freestanding version. The BSTF is transportable by a 5 Ton truck. Initial FUE was FY92, with continuous fielding through FY02. The BSTF is currently planned to support ASAS, AVENGER, DGM, DRAGON/TOW, GBS, HAWK, KIOWA WARRIOR, MLRS, NBC-FOX, PALADIN, TTC/TTY-39, AN/VRC-12, and BRADLEY TOW II. (CPT Moorhead/DSN 680-3155/e-mail: moorheaj@monroe.army.mil)

#### **Integrated Family of Test Equipment Electro-Optic Test Facility (EOTF):**

The EOTF will provide the Army with a standard piece of Automatic Test Equipment (ATE) capable of supporting present and future electro-optic (EO) systems that will be deployed in the year 2000 and beyond. Initial fielding will be to the Aviation community in support of the Kiowa Warrior and the Apache Longbow. The test equipment shall provide intermediate level maintenance (DS/GS & AVIM) for highly complex avionics, communications, combat, tactical tracked vehicles, missiles and other EO equipment. Initial fielding will begin in FY00 to the school house, and in FY 01 to the field. (CPT Moorhead/DSN 680-3155/e-mail: moorheaj@monroe.army.mil)

#### **Integrated Family of Test Equipment (IFTE) Electronic Repair Shelter (ERS):**

The ERS is a mobile electronic repair facility designed to provide a field capability to screen, test and repair printed circuit boards (PCB), from line replaceable units and shop replaceable units (LRU/SRU) and other selected PCB in the field. It will be utilized by General Support (GS) and higher levels of maintenance. It is designed to be compatible with and support Direct Support (DS) requirements and the IFTE BSTF, as well as other circuit card repair requirements at corps and echelons above corps. The ERS is housed in a 37' tactical trailer mounted van. Included in the ERS are card screening and testing equipment, conformal coating removal and application equipment, soldering equipment and PCB curing equipment to be used after repair and application of conformal coating. Current Army requirements call for the ERS to be located in 14 GS Electronic Equipment Repair Platoons, TOE 43549LM. FUE will be 4QFY98. (CPT Moorhead/DSN 680-3155/e-mail: moorheaj@monroe.army.mil)

#### **Improved Fox — NBC Reconnaissance System (NBCRS):**

The M93A1 is an armored reconnaissance vehicle equipped to detect, sample, identify, mark, and report the presence of NBC hazards. NBCRS will rapidly and accurately determine extent and nature of NBC contamination hazard over a specified area with expeditious transmission of information to supported units. Planned improvements will allow for digital communication to disseminate critical information to supported units via the Maneuver Control System (MCS). First Unit Equipped (FUE) is FY98 to Force Package 1 units. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

#### **Biological Integrated Detector System (BIDS):**

BIDS will quickly and reliably detect and identify the presence of biological warfare (BW) agents. The BIDS is a detector suite contained in a shelter mounted on a heavy HMMWV and includes a trailer-mounted generator. BIDS will incorporate existing long-range secure voice communications and data transmission systems to rapidly report vital information to mitigate large-area BW effects. System improvements are planned for the FY99 and FY03 time frame that will make the BIDS even more effective. The system is UH-60, CH-47D, and C-130 deployable. There is one active BIDS platoon and one USAR company currently fielded with these systems. They are FORSCOM assets and will deploy to support any contingency operation where the threat of BW is present. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

### **Remote Sensing Chemical Agent Alarm (RSCAAL):**

RSCAAL is a remote sensing chemical agent alarm that detects nerve and blister agent clouds at distances up to 5 km. This system is passive infrared sensor with an onboard microprocessor. It uses line-of-sight and scans along a 60-degree arc from the detector. RSCAAL components consist of detector, retractable tripod, transit case, vehicle mount, and standard military power source. The basis of issue is one per NBC Reconnaissance Team and fielding began in late 95. The NBC Reconnaissance Vehicle is currently being modified to accept this article as a component and fielding of the improved NBCRS will begin in 3QFY98 beginning with XVIII Airborne Corps, then III Corps, the two ACR's, Korea, then Germany. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

### **Automatic Chemical Agent Detector Alarm (ACADA):**

ACADA is an automatic point detector (scheduled to replace the M8A1) that will detect both nerve and blister agents. The system will weigh less than 15 pounds and be 0.5 cubic feet or smaller in size. The new system will have the added blister capability improvement over the M8A1, as well as a decrease in the number of false alarms. The basis of issue for the ACADA is one for one replacement for the M8A1 and is currently funded for Force Package 1 and 2 units. Fielding is currently scheduled for 4Q FY98. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

### **AN/UDR-13 Pocket Radiac:**

The Pocket Radiac is a radiation dosimeter that measures initial and residual gamma radiation and prompt neutron radiation. The system will automatically alert the operator when safe radiation dose is exceeded. The system improves on the IM-93 in that it measures both prompt and residual gamma and neutron radiation doses and also measures dose rate that previously required a different detector (IM-174/AN-VDR-2). This system will replace the IM-93 with a Basis of Issue of one per platoon. This system is currently scheduled for fielding in Feb 98 to FORSCOM Units in DAMPL sequence. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

### **XM-94 Long-Range Biological Standoff Detection System (LR-BSDS):**

The XM-94 LR-BSDS is a self-contained light detection and ranging (LIDAR) system consisting of three components: an infrared (IR) laser transmitter, a receiving telescope, and a detector with an information processor, integrated into a

frame. The XM-94 can detect, range, and track probable biological aerosol clouds while on the move, at distances out to 30 km. To attain these distances the system must be elevated and mounted on a rotary wing aircraft (UH-60). The LR-BSDS will provide near real-time, critical aerosol cloud information that will be integrated with other battlefield indicators to detect large-area biological warfare attacks. These items are allocated on the basis of 3 per contingency Corps. The items will be located in the BIDS Company and the first items were fielded to the 310th Chemical Company at Fort McClellan, AL in Jun 97. (MAJ Franks/680-4412/e-mail: franksc@monroe.army.mil)

### **M56 and M58 Smoke Generation Systems:**

The M56 and M58 are large area, mobile smoke generator systems which produce visual or infrared smoke. Future improvements will include millimeter wave (MMW) obscurant capability. The smoke generator is modular in construction including a power module, visual module, IR module, and future MMW module. The power module uses a gas turbine to disseminate obscurants. The M56 is HMMWV mounted and the M58 is mounted in a M113 tracked vehicle. The system requires only two fuels, vehicle/turbine fuel and fog oil. Fielding scheduled to begin in 3QFY98 for FORSCOM units and 4QFY98 for the U.S. Army Chemical School. (Mr. Dixon/680-4413/e-mail: dixonw@monroe.army.mil)

### **Armored Security Vehicle (ASV):**

The ASV is a lightly armored, combat support vehicle. It is needed to provide minimum essential protection to selected Military Police (MP) units in highly exposed threat environments. The primary vehicle requirements are ballistic protection (wrap-around and overhead), and gas particulate ventilated face piece system for NBC protection, while offering a substantial increase in lethality. Other goals of the ASV are to achieve comparable mobility and communications capabilities of the current MP weapons platform. A contract was awarded 12 Dec 95 to Textron Marine and Land Systems for four ASV prototypes for government testing. This is a Program Executive Office-Tactical Wheeled Vehicle-managed program for the MP. The four vehicles have undergone a limited user test and are currently being reworked to comply with user requirements. Operational testing is scheduled for 4QFY98. A Milestone III decision review is expected in 1QFY99. First unit equipped is expected in 2QFY00. (CPT Morano/680-2539/e-mail: moranoa@monroe.army.mil)

### **Light Vehicle Obscuration System (LVOSS):**

The LVOSS is a 66mm, self-defense smoke/obscurant device externally mounted on light vehicles such as High Mobility Multipurpose Wheeled Vehicles

(HMMWVs). Light vehicles do not have an effective means of providing obscuration smoke for concealment and nonlethal self-defense. The operational need for the LVOSS system was documented in support of the infantry's HMMWV-equipped TOW units and MP-variant HMMWVs. A Milestone III decision was reached on 27 Aug 97. The LVOSS is currently Type Classified - Standard. Development continues on the 66mm crowd control munitions (CS and Sting Ball) and an early warning laser detector to further enhance crew reaction time. First Unit Equipped is expected in 4QFY99. (CPT Morano/ 680-2539/e-mail: moranoa@monroe.army.mil)

**Charge, Demolition: Shaped, Clipped (CDSC), M221:**

The M221 CDSC is a two-piece assembly to be used as a light-weight, inexpensive alternative to Composition C-4 by explosive ordnance disposal (EOD) and special operations personnel. The CDSC was Type Classified Standard in Mar 97 and is scheduled for fielding in Aug 98 to EOD units. (Mr. Bickhart/680-4411/e-mail: bickhard@monroe.army.mil.)

**Advanced Radiographic System (ARS):**

The ARS is a modified commercial item, two-person portable, filmless radiographic system using the x-ray generator from the current MK32 X-Ray System. It is designed to allow EOD personnel to view internal features of suspected improvised explosive devices and ordnance fuzing to determine contents and fuze condition with minimum time-on-target. It is scheduled to be approved for production in 3QFY98 and fielded to EOD units in 1QFY99. (Mr. Bickhart/ 680-4411/ e-mail: bickhard@monroe.army.mil)

**Remote Ordnance Neutralization System (RONS):**

RONS is a remotely operated, reusable robotic machine to be used by EOD personnel to remotely search for, identify, determine condition of, and perform physical actions on unexploded ordnance and improvised explosive devices at hazardous sites. RONS is a modification of the robot currently in the EOD inventory. It is scheduled to be approved for production in 3QFY98 with fielding to EOD units in 4QFY99. (Mr. Bickhart/ 680-4411/e-mail bickhard@monroe.army.mil)

**UH-60Q Medical Evacuation (MEDEVAC) Helicopter:**

The UH-60Q will provide improved medical, navigational, and communication capabilities over the currently employed MEDEVAC (UH-1/ UH-60A) aircraft. The enhanced medical interior

will incorporate a litter lift, medical cabinet, improved interior lighting, crash worthy attendant seating, electrical distribution of 115v/60hz power, IV warmer/ cooler, and plumbing for medical suction and oxygen. Improvements also include a Pilot Locating System (PLS) system which allows for the location of downed aircrews. It incorporates a receiver/transmitter which gives range and bearing to a survivor transmitting on a survival radio. (MAJ Nickell/680-3158/e-mail: nickelle@monroe.army.mil)

**Ground Medical Evacuation:**

HQDA approved the Operational Requirements Documents (ORDs) for both the Armored Treatment Vehicle (ATV) and the Armored Medical Evacuation Vehicle (AMEV) in Nov 96. These vehicles will replace the M577/M113 which were not designed for the medical mission. The ATV will have a patient treatment area with room for the treatment team to have access to two patients inside the vehicle, with full body access to one of them, in order to perform Advanced Trauma Management (ATM). The AMEV provides the capability to carry any combination of four litter patients and eight ambulatory patients, and the evacuation crew. Fielding of ATV scheduled to begin in FY99. (MAJ Nickell/680-3158/e-mail nickelle@monroe.army.mil)

**Medical Nuclear, Biological, and Chemical (NBC) Defense Acquisition Program:**

Procures products for the centralized management of chemical medical defense products. It procures the initial and improved stocks of NBC pretreatment and treatment products and is executed by the Joint NBC Defense Board. This program contains numerous products that are both replacements and new items. (MAJ Nickell/680-3158/e-mail: nickelle@monroe.army.mil)

**Medical Communications for Combat Casualty Care (MC4):**

The Medical Communications for Combat Casualty Care (MC4) Program will provide for fully integrated medical products and information and communication solutions that effectively and seamlessly link both vertically and horizontally all echelons of medical care. This linkage will include all current and future information systems and databases, communications systems, administrative procedures, medical diagnostic and monitoring systems, patient treatment systems, and evacuation platforms that span the operational continuum. The end state of this program is to provide a fully integrated information system that supports both the warfighter and the combat health support (CHS) system. This capability enables CHS personnel at all echelons to exchange information with each other by audio, digital, video, and electronic media. This

communications ability will ensure maximum use of theater and United States based medical specialty skills, diagnostic capability, and treatment regimens. The integration of existing and emerging information technologies into the CHS and patient care systems, beginning with the individual soldier and continuing throughout the healthcare continuum, will allow the AMEDD to project the expert care necessary to sustain the future force. (MAJ Nickell/680-3158/e-mail: nickelle@monroe.army.mil)

#### **Medical Re-engineering Initiative (MRI):**

The U.S. Army Medical Department Center and School (AMEDDC&S) Combat Developments process for force structure review/revision to support a CONUS-based, force projection Army. The principal product of this process, the Combat Health Support Operational Concept, recently was submitted for approval and inclusion into the TRADOC 525-series of pamphlets. This document is the AMEDDC&S's evolving vision of future medical operations and organizational designs. The major tenets of this vision are:

- a. Far-forward medical treatment including advanced trauma management and far-forward surgery.
- b. Standardized medical units using a modular-designed medical support system.
- c. Standardized air and ground evacuation units, using air evacuation as the primary means of evacuation on the battlefield.
- d. Maximum use of emerging technology to improve battlefield survivability and decrease mobility and resource requirements.
- e. Flexible, responsive, and deployable hospital design and structure.
- f. Enhanced ancillary and functional support systems using state-of-the-art technology.
- g. Medical command and control units with split-based operational capability.

(MAJ Nickell/680-3158/e-mail: nickelle@monroe.army.mil)

#### **Chemically Hardened Air Transportable Hospital (CHATH) / Chemically Protected Deployable Medical Systems (CPDEPMEDS):**

The objective of the Army Chemically Protected-Deployable Medical Systems (CP DEPMEDS) program is to provide the items necessary to protect the hospital unit base (HUB) of a Medical Force 2000 (MF2K) hospital. The HUB consists of five (5) expandable one-sided shelters; five (5) two-sided expandable shelters; 10 TEMPER tents, 16' x 20'; 13 medical TEMPER tents, 64' x 20'; two surgical TEMPER tents, 64'x20'; 53 environmental control

units; three patient and supply entry/exit points 16'x 20'; and the associated passageways, and International Standards Organization (ISO) to ISO connectors. The CHATH/CPDEPMEDS will be able to operate in NBC threat environments as defined in the SON and the referenced threat documents. Chemical protection will be provided against the following agents as identified in AFR 355-7, Potential Military Chemical/Biological Agents and Compounds: GA, GB, GD, VX, TGD, HD, THD, HL, L, CX, CK, AC, CS, and CN (FM 3-9, NAVFAC P-467P). Biological protection will be provided similarly against infectious agents anthrax, tularemia, cholera, enterobacterial poisoning, Q-fever, encephalomyelitis viruses, and plague. Biological protection will also be provided similarly against: botulinum, mycotoxins, ricin, staphylococcus enterotoxins, cyanobacteria, saxitoxin, and tetrodotoxin toxins. Protection from nuclear contamination in the form of dust, small debris, and fallout will also be provided. For the Army, the system will meet the threat environment identified in the Letter of Requirement for the M28 SCPE. (MAJ Nickell/680-3158/e-mail: nickelle@monroe.army.mil)

## **SOLDIERS**

*The Army's most valuable resource is the Soldier. Regardless of how superior our leadership, weapons, and technologies might be, it is the soldier who is the backbone of the Army. We are providing a comprehensive program to modernize the soldier as a battlefield system and to maximize warfighting capabilities by enhancing lethality, survivability, command and control, sustainability, and mobility. (Mr. Roberts/680-3512/e-mail robertsd@monroe.army.mil)*

#### **Soldier Systems:**

The total Army program for modernizing the soldier as a system. It includes all soldiers and provides for acquisition of all items worn, carried, or consumed by soldiers for individual use in a tactical environment. The ultimate result will be greatly enhanced combat capabilities in lethality, survivability, command and control, sustainability, and mobility to fully integrate the soldier into the digitized battlefield. The Soldier System will produce three major variants of an integrated fighting system: Land Warrior for dismounted soldiers; Air Warrior for air crewmen; and Mounted Warrior for combat vehicle crewmen. The dismounted system includes a modular weapon with thermal sight, improved ballistic protection, a soldier computer/radio, combat ID, and other capabilities. Initial fielding of the dismounted Land Warrior

System is programmed to begin in FY00. Programmed first unit equipped is to be SOCOM (75 Ranger Regiment). The Air and Mounted Warrior Programs will modernize and fully integrate all components of CVC/ALSE to improve the man/machine interface, survivability, and C4I. Initial fielding of these systems is expected to be after FY00. Soldier Modernization also includes common items of dress clothing, OCIE, and Occupational Health and safety equipment. (Mr. Younger/680-3114/e-mail [youngers@monroe.army.mil](mailto:youngers@monroe.army.mil)) (Mr. Roberts/680-3512/e-mail [robertsd@monroe.army.mil](mailto:robertsd@monroe.army.mil))

#### **Soldier Enhancement Program (SEP):**

A quick reaction program initiated by Congress in 1990 to expedite modernization of infantry soldier equipment. The program has since been expanded to include all soldiers and to address quality of life issues in the field. The focus is on nondevelopmental solutions which can be ready for procurement in 36 months or less. The program includes small arms, optics, munitions, clothing and individual equipment, and individual combat rations. Thirteen new projects were approved for FY99. (Mr. Younger/680-3114/e-mail [youngers@monroe.army.mil](mailto:youngers@monroe.army.mil))

#### **Aircrew Protective Mask (ACPM), M45:**

The M45 is the negative pressure replacement mask for the XM49 Aircraft Mask, formerly M43 Type II, for all Army aircrew members except AH-64 (Apache) helicopter pilots. It is designed to protect wearer's head, neck, face, eyes, and respiratory track against NBC contamination without the use of forced ventilation air. It is compatible with current and developmental night vision devices, current and developmental Army aviator helmets, aircraft weapon sighting systems, and helmet-mounted displays, except for Apache's integrated helmet display sighting system. The mask is Type Classified - Standard and production began in FY97 with FUE scheduled for May 98. (Mr. Morrison /680-2557/e-mail [morrisob@monroe.army.mil](mailto:morrisob@monroe.army.mil))

#### **Joint Service Lightweight Integrated Suit Technology (JSLIST):**

The JSLIST program is the next generation of chemical protective ensembles tailored for the Army, Marine Corps, Air Force, and Navy. Design goals include a suit that is lighter and less bulky with reduced heat stress, improved user acceptability, minimized types of suits in services, tailored protective level relative to mission scenarios and threat, and maximized inter-service compatibility. It will consist of a permeable garment with a hood, gloves, and boots and be compatible with protective masks used by the various services. The requirements emphasize agent protection, durability, flame protection, heat-stress reduction, launderability/

decontaminability, improved user acceptance/human factors, and supportability. JSLIST has four basic configurations of chemical protective garments: an overgarment (OG) which can be worn over the battledress uniform (BDU); a duty uniform which is like the OG but tighter fitting for USMC and USAF; an enhanced aircrew integrated battlefield uniform which is the aviators version of the OG; and a vapor protective, flame-resistant undergarment worn under a regular non-CB duty uniform such as the BDU or combat vehicle crewman's (CVC) coverall. The 3QFY97 Milestone III In-Process Review only approved the multipurpose overboot (MULO) and the basic suit (with some modifications) for production. (Mr. Morrison/680-2557/e-mail [morrisob@monroe.army.mil](mailto:morrisob@monroe.army.mil))

## **BATTLE LABS**

TRADOC Battle Labs continue to be a driving force behind TRADOC's successful efforts as "Architect of the Future." In their primary role of planning and conducting experiments, the Battle Labs are now into their sixth year of exploring the doctrine, training, leader development, organizational, materiel and soldier support (DTLOMS) possibilities for future operations. These funded experiments and demonstrations are a direct result of the concept development and technology search activities in which the Battle Labs have participated throughout the past year. Key Battle Lab input to the Army's Requirements Determination Process will lead to an Army XXI that will be unmatched in its ability to dominate the future battlefield.

The current list of Army Battle Labs:

Air Maneuver Battle Lab (Fort Rucker)

Battle Command Battle Lab (Fort Leavenworth)

Battle Command Battle Lab (Fort Gordon)

Battle Command Battle Lab (Fort Huachuca)

Combat Service Support Battle Lab (Fort Lee)

Depth and Simultaneous Attack Battle Lab (Fort Sill)

Dismounted Battle Space Battle Lab (Fort Benning)

Mounted Maneuver Battle Space Battle Lab (Fort Knox)

Space and Missile Defense Battle Lab (Huntsville, AL)

Maneuver Support Battle Lab (Fort Leonard Wood)

Described below are only a few of the many current and future activities of some of the Battle Labs. They are a representation of the kind of work being

done in the Battle Labs to build the future Army. Additional information about these and other programs can be accessed through the Battle Labs Home Page found on the internet at <http://battlelabs.monroe.army.mil>.

## **Battle Lab Integration, Technology and Concepts Directorate (BLITCD), DCSCD, HQ TRADOC**

BLITCD continues to coordinate Battle Lab participation in several significant processes that lead to the selection of experiments and systems to be funded. Some BLITCD activities and programs are listed below.

### **AECF:**

AECF is the Army's plan to integrate and focus future experimentation beyond the Division AWE held at Fort Hood in Nov 97. It consists of 5 axes:

1. Army XXI Division Issues. This is the wrap up efforts, mostly analytical, to field the First Digitized Division (FDD) by '00. The Division Capstone Exercise (DCX) is the only large event on this axis.
2. EAD/Corps/EAC. Experimentation along this axis will evaluate and help define effects and requirements of digitization for echelons above division. A Corps AWE is scheduled for FY02. Corps Warfighters, TPSO ACTD and RTV ACTD are also initiatives on this axis.
3. Contingency Force. This axis will evaluate how best to conduct Contingency Operations with near term technology. This evaluation includes looks across the DTLOMS and include light, heavy, SOF and joint forces. A Joint Contingency Force AWE will be conducted in '00-01 time-frame. ACTDs along this axis include RFPI, MOUT, LOSAT, and ELB.
4. Battle Force. This is experimentation to build and provide a middleweight force capable of rapid deployment, but more lethal than current light/contingency forces. This force will be brigade/regiment size and will train to fight as part of a JTF. Battle Force will be an early ancestor to AAN.
5. Army After Next. The effort to build, staff, integrate, and schedule the AECF is ongoing. The AECF will be briefed to CSA on 30 Jun 98.

### **Board of Directors:**

The purpose of the Board of Directors is to review prior experiments and recommend which technologies experimented with should be:

1. Submitted as Warfighting Rapid Acquisition Program (WRAP) candidates

2. Developed as a formal requirement and placed in the normal acquisition process
3. Experimented with further
4. Discontinued as not feasible or inapplicable.

The Board of Directors held a VTC on 18 Dec 97 to discuss WRAP candidates.

### **WRAP:**

A message announcing Warfighter Rapid Acquisition Program (WRAP) '98 went out on 10 Sep 97. HQ TRADOC initially received twenty-three WRAP packets. Sixteen candidates were briefed to CG TRADOC on 16 Dec 97. Three systems were removed from the list of candidates. On 15 Jan 98 a WRAP ASARC reviewed thirteen systems to be funded with the \$36.9M available. The ASARC disapproved the AMTV and BICEP. Current competing systems include:

1. Air and Missile Defense Planning and Control System
2. Analysis and Control Team (ACT) Enclave
3. Close Combat Tactical Trainer - XXI
4. Digital Topographic Support System
5. Forward Repair System
6. Grenadier Brat
7. High Speed Multiplexer
8. Integrated Combat Service Support System
9. Movement Tracking System
10. Near Term Digital Radio
11. Tactical Simulation Interface Unit

Currently, seven of the systems are being staffed for approval to the CSA.(1-4, 6-8) The remaining four are on-hold until issues are resolved. (5, 9, 10)

### **CEP:**

CEP resources TRADOC internally generated experiments related to all types of future technology, or concepts across DTLOMS. The latest CEPSARC was held on 9 Oct 97. Its recommendation was approved by the DCSCD on 18 Nov 98 which funded 54 new CEPs, 3 carry-overs, and totaled \$10.46M. As of FY 98 each TRADOC battle lab will receive \$100K of experimentation funding upon request, in addition to their formally approved CEPSARC CEPs. These funds are for quick-action experimentation and are conducted within existing CEP policy procedures and guidelines.

### **ACT II:**

The ACT II program encourages application of maturing commercial technologies to address immediate Army concerns. Its purpose is to shorten the

acquisition cycle and reduce development costs. ACT II competitively funds private industry and academia-initiated projects based on Battle Lab interests. Successful technologies may become part of regular R&D process, be selected for WRAP, or transition directly to an end item. A panel of the Deputy Directors, led by BLITCD, selected projects for funding in FY 98. Through this Technical Evaluation Board selection process, 17 projects were designated for funding, totaling \$10.3M, across all the Battle Labs. A Mounted Maneuver project was determined to be of similar scope as a funded project at Battle Command – Huachuca. Resultantly, the Huachuca contract was modified to incorporate work for Mounted Maneuver at a slight increase in cost; thereby funding two for almost the price of one. Three additional projects just below the cut line were designated for funding, should funds become available (Band 2). Two of these three were eventually funded; the British did not fund the third due to duplicate, ongoing work. One of the original 17 proved later impractical, releasing funds. An additional, acceptable project from Band 3 was selected for funding in support of the Commander in Chief-U.S. Army Korea. The total projects funded for FY 98 is now 20.

The FY 99 cycle was initiated with the publication of 33 topic areas of interest from the Battle Labs and the supported DCDs in the draft Broad Area Announcement. The topics will be briefed to industry representatives at the 13-14 April Pre-proposal Conference at the Omni Newport News Hotel. There, industry representatives can interact with the Battle Lab staffs about their topic areas. Industry will respond to the BAA with 2-page concept papers by COB 2 June 98. From the concept papers, the Battle Labs will request a select few full proposals for evaluation.

#### **Science and Technology Objective (STO) and Advanced Technology Demonstration (ATD) Review:**

Coordination for this year's annual STO/ATD review has been on-going throughout the quarter. This year's review will be held from 5-7 May in the local Hampton area. Meetings have been held with AMC HQ concerning this year's review and the new focus on AAN, HTI and Space Applications STOs and ATDs. AMC HQ conducted their own internal STO/ATD review 21-24 March in preparation of the TRADOC Review. Approximately 120 STOs and 9 ATD nominations will be reviewed and voted.

#### **Ongoing ATD Actions:**

Obtained DCSCD approval on two ATD Management Plans: Multi-Mission/Common Modular UAV Sensors, and Mine Hunter Killer. Forwarded to AMC HQ for their approval.

#### **New ATD Process:**

The ASTWG briefing conducted on 31 July 1997 provided the status of current and new ATDs. Ten of the current twenty-three ATDs were classified as delinquent. This resulted in a tasker from the ASTWG to form an ATD IPT. The purpose of this group was to shorten the time it takes to get approval of the ATDs and to eliminate delinquent ATDs. An IPT was formed with representatives from: AMC, SARDA, HQ TRADOC, DCSOPS, SMDC, OPTEC, ARDEC, CERDEC, MRDEC, TARDEC, USAMRMC and COE. The approach was to examine the causes of delinquency, obtain ATD Manager input, define the current baseline, identify current baseline issues, brainstorm process improvements, obtain consensus on process improvements, obtain ASTWG approval for recommendations, prepare changes to DA Pam 70-3 (Army Acquisition Procedures), and develop implementation instructions. The key findings were:

- (1) Plan development occurs too late in the process.
- (2) There is no formal teaming of the key stakeholders.
- (3) Currently there is too much focus on the exit criteria rather than a complete focus on the entire plan.
- (4) Need for more awareness of the entire process.

The primary recommendations for the ATD process improvement are: earlier plan development, better teaming throughout the process and a major effort in maintaining a continuity in format of the ATD nomination packets and the actual plans. These results were briefed to the ASTWG on 25 Nov with the final report to the ASTWG scheduled for EOM Jan 98. Changes will be documented in the new DA Pam 70-3, which is currently being staffed.

#### **Science & Technology Integrated Process Team:**

S&T IPT was chartered to ensure the timely review, coordination, and agreement between HQ, AMC and HQ, TRADOC on improved S&T review processes. BLITCD hosted the second S&T Review IPT on 19 November 97 from 0830-1630 hours at the Holiday Inn-Hampton. Sixty-six representatives from forty-three agencies (22 CBTDEV, 19 MATDEV, 2 DA) participated in the IPT. The IPT submitted three recommendations to the Partnership Conference for approval, the recommendations were accepted as presented. The recommendations were:

1. All S&T work packages be reviewed annually to support the TRADOC S&T Review.
2. The S&T calendar be changed to shift the ASTWG from July/August to June/July, add

MATDEV relevant STO dates, shift the S&T Review process 30 days to the left and add any changes required by the new ATD process upon its approval.

3. The recommendations to the voting methodology have been modified to alleviate ambiguity of the Summer Conference recommendations. The IPT recommended changes as follows: eliminate all references to specific numbers of FOCs considered during the voting process, eliminate the Numerical Value/2 category - Partial support of FOCs and add category Numerical Value/0 category – Linkage to FOCs does exist but the work package has no operational merit.

#### **ACTD:**

Based upon concerns expressed by the CSA with proliferation of unneeded requirements from Advanced Concept Technology Demonstrations (ACTDs), BLITCD generated an ACTD Nomination, Approval, and Execution Process. This Process is published within Chapter 8 of the TRADOC Pam 71-9, Requirements Determination Process. BLITCD leads Army efforts from a CSA Tasker on the Enhanced Fiber Optic Guided Missile (EFOGM) Company. We will structure the Rapid Force Projection Initiative (RFPI) ACTD to permit the EFOGM Company to deploy on contingency operational missions with the XVIII Corps upon completion of the ACTD field demonstration. ACTD program actions that have been staffed through the TRADOC Headquarters this quarter include: the Joint Telemedicine ACTD Management Plan and the Joint Modular Lighterage System (JMLS) ACTD Implementation Directive. The Requirements Integration Manager (RIM) appointments have been made for the JMLS, and the Link-16 Joint Variable Message Format (JVMF) ACTDs. Currently staffing the management plan endorsements for three separate ACTDs: Line of Sight Antitank (LOSAT), Rapid Terrain Visualization (RTV) and Theater Precision Strike Operations (TPSO).

#### **Small Business Innovative Research Program (SBIR):**

The first TRADOC/AMC SBIR IPT was conducted on 17 September 97 to introduce TRADOC to the current SBIR process. The agencies did reach consensus that TRADOC participation should be limited to a review and comment for the Phase 1 SBIR Solicitation 98.2. TRADOC Battle Labs did participate this year by reviewing the Phase 1 topics, providing comments and by indicating which ones they would be interested in tracking. A second TRADOC /AMC SBIR working meeting with Dr. Gabriel and Dr. Bannister from ARO-W was conducted on Tuesday 24 Feb at Ft. Monroe. Status of TRADOC's involvement in the SBIR process was discussed. Each office proposed areas for future involvement and commitments were made to keep working on an agreement

that could be reached between the combat and materiel developers. The following recommendations are for TRADOC participation after Phase 1 - 98.2 solicitation:

- (1) TRADOC and the RDECs/Labs work in concert to develop all SBIR topics
- (2) All SBIR topics must have a TRADOC sponsor
- (3) TRADOC participates in the development of the OML at the RDEC/Lab, TAC, and SEB
- (4) TRADOC participates in the down select to Phase II and the annual review of Phase II topics
- (5) TRADOC participates in the Oversight/Management Team and the Arbitration Board
- (6) FOC linkage to all SBIR topics is required.

The next step in the process is for BLIT to develop and staff a Memorandum of Agreement (MOA) to identify TRADOC and AMC responsibilities and participation in the SBIR process.

#### **Horizontal Technology Integration (HTI) Activity:**

Several HTI initiatives are currently underway including a GPS/Position-Navigation requirement assessment and an HTI Initiative for Tactical Lasers and Battlefield Sensors. HTI is embedded in the Requirements Determination process and is currently being incorporated into new Science and Technology policy for Advanced Technology Demonstrations (ATDs). R. Dodd/x5715

#### **Robotics Technology:**

An OSD/ARL/Joint Projects Office for Robotics jointly sponsored conference on unmanned ground vehicles (UGVs) was held in November 1997. As a result TRADOC HQ will host a Robotics Workshop from 7 to 9 April at Ft Knox KY. Future meetings, if necessary, will rotate to other locations. The purpose of this meeting is to: 1) review overall robotics activities, on-going and planned, across the command to include related concepts, future operational capabilities, experimentation, Integrated Concept Teams (ICTs) and requirements and 2) identify opportunities for increased cooperation and efficiency.

#### **AMC/TRADOC Partnership:**

The AMC/TRADOC Semiannual Partnership Conference was held at the Holiday Inn-Select, Alexandria, VA on 12 December 1997, 0800-1430. Major General (MG) Robert T. Clark, Deputy Chief of Staff for Combat Developments (DCSCD), Headquarters, TRADOC and MG John Caldwell, Chief of Staff for Research, Development and Acquisition (DCSRDA), Headquarters, AMC presided.



### **Concepts:**

TRADOC HQs currently has 22 concepts in development. Since the last publication of TRADOC Pam 25-30 (Index of TRADOC Administrative Publications) dtd 3 Feb 1997 there have been eleven CG TRADOC approved 525 series concepts published. The TP 525-5 Integrated Concept Team has held two VTCs since the last report, 9 & 12 Mar 98. LTG Adams is scheduled to receive a full status laydown and azimuth check on the writing effort to date on 3 Apr 98.

### **Armor Branch Warfighter Concept Statement:**

Concept statement has been reviewed and changes made by Concepts and Scenarios Div (CSD) in coordination with the proponent. Concept Statement packet has been approved for worldwide staffing by the Director BLITCD.

### **Concept Statement for Army Special Operations Forces (ARSOF) XXI:**

Operational Concept for the 21st Century: Proponent's initial submission to HQs TRADOC, 19 Dec 97, was sent to the wrong agency. CSD, in conjunction with the proponent, discovered this and resubmission was received on 4 March 98. CSD revised the document to comply with TP 71-9 and provided it to the proponent for review on 10 March 98. CSD will execute worldwide staffing of the Concept Statement upon return from proponent.

### **Engineer School Concept Statement for Countermining Operations:**

U.S. Army Engineer School submitted a draft concept statement for HQ TRADOC review. The draft concept statement was reviewed and non concurrence forwarded to the proponent. HQ TRADOC recommends that this Countermining Concept be included/incorporated into the Engineer School's current effort in writing the Concept for Military Engineer Operations.

### **Military Police Concept Statement:**

The DCSCD approved this concept statement on 1 March 98. The endorsement and staffing statements were sent and received by MP DCD on 3 March 98.

### **Theater Missile Defense Concept Statement:**

Received draft concept statement for Theater Missile Defense (TMD) from U.S. Army Space & Missile Defense Command on 5 Feb 98. Worldwide staffing began on 6 February 98. Staffing suspense to HQ TRADOC 1 May 98.

### **Concept for Military Engineer Operations:**

Final Draft of the Operational Concept for Military Engineering Operations has been reviewed by CSD. It was determined, and verified by the proponent,

that this Final Draft did not undergo full worldwide staffing as either a Coordinating Draft or in its present form as a Final Draft. To salvage the efforts of the proponent, and ensure that the document receives the benefit of a complete review from the field, CSD will prepare this Final Draft for worldwide staffing. As the Commandant of the Engineer School signed the Final Draft request for HQs TRADOC approval, a form 30 and memo with the DCSCD's signature will be prepared to accompany the packet. It will inform the field that this is a final review and that some units, but not all, may have reviewed this document as a Coordinating Draft. A separate memo to the Commandant of the Engineer School from the DCSCD will inform of the reason for the worldwide staffing.

### **U.S. Army Aviation Branch Concept, TRADOC Pamphlet 525-80:**

Final draft concept was approved by the CG TRADOC 29 Jan 98. Concept will be published and placed on the TRADOC Home Page when returned from final editing.

### **Integrated Sustainment Maintenance Concept, TRADOC Pamphlet 525-81:**

Final draft concept was approved by CG TRADOC 6 Feb 98. Concept will be published and placed on the TRADOC Home Page when returned from final editing.

### **Chaplain Corps Branch Concept, TRADOC Pamphlet 525-78:**

Chaplain Branch Concept edit was completed and forwarded to DOIM government printing office for printing. The U.S. Army Chaplain School Religious Support Concept has been posted on the TRADOC Home Page, under TRADOC Pamphlets.

### **Scenarios:**

1998 Scenario Planning Conference: On 17 Dec 97 memorandum announcing subject conference e-mailed to invitees. Conference will be held at Ft Leavenworth, KS on 14-15 Jan 98. Attendees will identify and prioritize TRADOC standard scenario production requirements for the remainder of FY98 and FY99.

### **Analysis of Alternatives (AoA) Workshop:**

In response to issues raised by OSD staff concerning scenarios, threat and Joint context for Army analyses, Mr. John Riente and Mr. Al Resnick co-chaired a Senior Analysts AoA Workshop on 21-22 January 1998. BLITCD as a member of core team developed issue papers, that were presented at the workshop 11-12 March 1998. CSD, BLITCD has the lead for two scenario issues. Work continues in this effort.

## **FOCs:**

The first edition of TRADOC Pam 525-66 Future Operational Capability (FOC) was approved 1 May 97. It is published on the TRADOC Home Page, and replaces TRADOC Pamphlet 525-66, Operational Capability Requirements (OCR). FOCs summarize the desired future operational capabilities described in TRADOC approved operational concepts for a specific branch (Infantry, Armor, Signal) or particular warfighting tool or arena (Information Operations, Force Projection, Training.) Integrated FOCs apply to multiple branches and battlefield functions. FOCs serve as the basis for the TRADOC requirements determination process, to include conducting studies and experimentation, and they provide focus for the Army Science and Technology Programs.

The 1997-98 Integrated FOC Workshop was conducted in Hampton, VA. 9-11 Dec. Members of the TRADOC Schools and Centers Combat Developments offices and Battle Labs, as well as representatives of the S&T materiel developer community attended. TRADOC Pamphlet TP 525-66 is currently undergoing revision and has a target date for publication of 1 May 1998

Following two AO level meetings with DCSCD functional directorate reps, a draft new FOC format (with instructions) intended for FY 1999 S&T cycle has been submitted to Dir. BLITCD for comment/approval. Upon approval it will be staffed with commandants, DCDs and BL Directors this spring prior to forwarding for CG approval.

CSD AO is working draft rewrite of TP 525-66 with proponent inputs. Expect to distribute same for staffing by 20 March 98.

## **Concepts Publication on the TRADOC Homepage WEB:**

All future publications of TRADOC Pamphlets will be through the World Wide Web (www). DCSIM will publish CG TRADOC approved concepts on the TRADOC HomePage at <http://www-tradoc.army.mil>.

## **Air Maneuver Battle Lab:**

Having been organized as of 1 October, 1997, the Air Maneuver Battle Lab (AMBL), based at Fort Rucker, is developing the structure and plans for future experimentation in support of the Army's Requirements Determination Process. Recent activities related to experimentation include the Division XXI AWE.

## **Division XXI AWE**

### **Overview:**

The Division XXI Advanced Warfighting Experiment was the most significant AWE in FY 97. It was a TRADOC sponsored event, evaluating several TRADOC defined objectives, the most significant being the force structure decision: what is the Force XXI Heavy Division Force Structure. This AWE was not one event in time and space. It consisted of a process of several simulation exercises and staff exercises conducted with 4th Infantry Division the Experimental Force (EXFOR) and the III Corps. Also, there were three Division Design Analyses (DDA) conducted concurrently testing alternate force structures. Also included is the live experiment conducted at the National Training Center, Task Force XXI. The final event in this process is the decision made by the TRADOC Commander concerning the force structure of the Force XXI Heavy Division, to be made in February of 98.

In support of the TRADOC defined objectives of the DAWE, the United States Army Aviation Center (USAAVNC) Air Maneuver Battle Lab sponsored six initiatives: Longbow Apache Battalion; Comanche Air Cavalry Troop; Army Airborne Command and Control System (A2C2S); Tactical Airspace Integration System (TAIS), the Battlespace Integrated Concept Emulation Program (BICEP), and the Aviation Tactical Operations Center (AVTOC). The initiatives were examined for their contribution to the Force XXI Patterns of Operations. All initiatives had associated analysis plans, and a "Subject Matter Expert" (SME), from the Aviation Center, who observed the users and the system throughout the AWE and all the Simulation Training Exercises leading up to it. These eight SMEs were assigned to TEXCOM during the conduct of the experiment. Their observations will be part of the analysis and are the basis of the official TRAC report to the TRADOC Commander.

In addition to specific systems, the DAWE also examined the changes in the proposed Conservative Heavy Division (CHD) force structure that was established for this experiment. The significant changes from the ARI Heavy Division Force Structure to the CHD include: the Cavalry Squadron as a separate unit under Division Troops, the number of Attack Battalions in the Aviation Brigade changed from two to one, the Attack battalion was fielded with 9 Comanche and 15 Longbow Apache, the Air Cavalry Troops were fielded with 12 Comanche RAH-66, some with FCR radar. The Division Aviation Support Battalion remained in the Conservative Heavy Division design, which was a positive event for the aviation community.

The Aviation Center's goal during the AWE was to "determine the increased warfighting capability of a digitized Aviation force and its impact on DTLOMS, and examine the impacts of the Interim Division Design on Aviation force capability". Based on the initial emerging insights, there is no doubt in the DAWE community of the very significant contributions of the Aviation Brigade and the Cavalry Squadron to the Digitized Division's Combined Arms fight. The most significant insights: the teaming of aviation, artillery and intelligence within one task force is a lethal combination for the OPFOR; also the addition of a DS MI Company to the Aviation Brigade was critical. The digital linkages of these precision weapon systems and ability to see real time the enemy situation was a very potent force on the battlefield.

#### **Battlespace Integrated Concept Emulation Program (BICEP) Customer Test and Evaluation:**

The BICEP is a virtual simulation system composed of non-developmental item (NDI) technologies that fill a critical void in our Army's ability to train aviation company/team collective tasks and battalion and brigade battle staffs at their home stations. Army aviation units currently lack required Training Aids, Devices, Simulators, and Simulations (TADSS) to train collective combat tasks at home station. BICEP resolves that problem by combining re-configurable mission simulators with ATTCS command workstations, both of which are driven by sophisticated war gaming software over a network to create a complex and challenging battlefield for both aircrews and battle staffs. The total system is transportable and was quickly positioned and assembled at Ft. Hood, TX to provide on-station training to aircrews and staff participating in the Division XXI AWE. The Battle Lab assisted the Aviation Center's Directorate of Training, Doctrine, and Simulation in nominating the BICEP as a Division XXI AWE initiative and, provided input and advisement for Warfighter Rapid Acquisition Program (WRAP) candidacy. Specific contributions of the Battle Lab to WRAP were our involvement of the Aviation Test Directorate of TEXCOM in the conduct of a user assessment of training potential via a Customer Test during the AWE, and the development of a Battle Lab assessment report following release of the results of the Customer Test.

#### **Buddy Start and De-Ice Hose Kit (BSDHK) Concept Experimentation Program (97-CEP-0102):**

The objective of this CEP was to collect data on the effectiveness of a modification to a pneumatic aircraft engine starting system, the Buddy Starter Assembly, NSN 1730-01-424-1576, to allow the additional function of de-icing. Harsh winter environments such as Bosnia make it difficult to transport aviation

ground support equipment ordinarily used for this purpose, e.g., the Aviation Ground Power Unit. The BSDHK modification would allow one aircraft to de-ice another. Methodology investigated the safety and human factor design of the nozzle and included temperature measurement of bleed-air to mitigate risk of blade de-lamination. An environmental chamber test demonstrated the capability of the system to de-ice aircraft with layers of ice comparable to those experienced in BOSNIA. CEP was completed 5 October 1997. TECO test report and Battle Lab evaluation report are pending.

#### **Manned and Unmanned Aerial Platform Operations on the Digitized Battlefield (97-CEP-0101):**

This CEP focuses on the interaction between manned and unmanned aerial surveillance and reconnaissance vehicles on the digitized battlefield. The 1997 part of the experiment develops the tools required to complete that evaluation and establishes a baseline of performance against which subsequent improvements in Tactics, Techniques, and Procedures (TTPs) may be determined. The baseline experiment is conducted entirely in constructive simulation with human in the loop (HITL) interaction. Subsequent experiments in following years will include virtual simulations. The simulation will incorporate an early entry reconnaissance for high payoff targets using both unmanned tactical UAVs (Outrider) and manned assets (RAH-66 Comanche in a reconnaissance configuration). The Air Maneuver Battle Lab (AMBL) will execute this experiment and all subsequent experiments at Fort Rucker.

### **Battle Command Battle Lab (Gordon)**

#### **Signal Corps Analysis of Division XXI Advanced Warfighting Experiment (AWE):**

DAWE is an exercise in which TRADOC and the Battle Labs integrate Commercial off the Shelf (COTS) Information Systems into battlefield operations. It was the next step after the Task Force XXI AWE that concentrated on digitization at brigade and below. One of the major objectives of this experiment was to validate the design of the "Year 2000 Digitized Division." The focus of Division XXI is battlefield digitization of the Division level TOCs. Inclusive of two major "ramp up" events, the first took place in June 1997, and the second was completed in September 1997. The 4th Infantry Division executed the Division XXI AWE in November 1997 at Fort Hood, Texas.

For the Warfighter to take advantage of information-age technologies, the same commercial equipment capability available to industry is required on the battlefield. By leveraging commercial industrial

technology and R&D, the attributes of the Warfighter Information Network (WIN) will provide the required C2 means and methods to the commander on the battlefield. Led by the BCBL (G), the Signal Center experimented with five communications initiatives and three demonstrations during Division XXI AWE:

#### **Initiatives**

1. Asynchronous Transfer Mode (ATM) Switching
2. High Capacity Trunk Radio-Minus (HCTR (-))
3. Global Broadcast system/Battlefield Awareness Dissemination Distribution
4. Near Term Digital Radio
5. Network Management

#### **Demonstrations**

1. Tactical Personal Communications Services
2. Battlefield Video Teleconferencing
3. High Speed Multiplexer

#### **Initiatives:**

##### **Asynchronous Transfer Mode Switch (ATM):**

The enhanced ATM Switch Initiative for Division XXI is an expansion from Task Force XXI. The DAWE XXI network employed the same ATM technology in the tactical environment that is designed for use in the low bit error rate, fiber optic based static networks. ATM switching offers significantly increased information flow and intelligence confirmation. The enabling technology for this initiative is a Low Bit Rate (LBR) protocol technology resident in the YURIE Systems Corporation's LDR-200 ATM concentrator. ATM offers advanced bandwidth management as it interleaves voice, video, and data (packets) on a cell by cell basis into a single communications pipe. This provides a robust cell-loss resistance and ATM cell bearing efficient bandwidth usage in the tactical environment.

The capabilities of the enhanced ATM technology provide a highly efficient communications system for high-speed data switching. This capability allows the transmission of voice, video, and data in a single communications link. The system is also capable of transmitting still photography, images and graphics. The application of ATM technology during the DAWE was intended to prove out its capability to dynamically assign bandwidth as more bandwidth was needed and thereby support a more efficient use of radio bandwidth. The ATM switch package provides a multimedia and a video teleconference (VTC) capability for commanders in the field. ATM technology is applied to selected switches in the mobile subscriber equipment (MSE) area common user system (ACUS). During the DAWE, ATM switches supported the workstations allowing key command-

ers to participate in VTCs using the MSE network as a transmission media.

The LDR-200 ATM concentrator is integrated into four MSE Node Center Switch (NCS) shelters and six Small Extension Node (SEN) shelters of the 124th Signal Battalion, 4th Infantry Division. During the DAWE, the data rate between NCSs were 4096 Kb/s, of which 1024 Kb/s were standard MSE voice traffic. The remainder of the bandwidth was used for battlefield video teleconferencing and other high bandwidth packet traffic between commercial routers. ATM use in the DAWE included enhancements to current TF XXI capabilities. The LDR-200 replaced the LDR-10, providing increased capability and easier use. Employed with the HCTR (-), bandwidth between node centers was increased significantly. Planned enhancements include Header Error Correction (HEC), Forward Error Correction (FEC) and Switched Virtual Circuits (SVCs). Sun Sparc workstations are used to provide multi-point video teleconferencing, interactive electronic whiteboarding for collaborative planning, and access to network information databases

ATM switching was assessed for its capability to assign priority and precedence for designated users to allow data from high priority users to be sent out first. The ATM hub is designed to be the backbone switching support for all tactical users. It can terminate wideband fiber optics and synchronous optic network radios as well as currently employed tactical digital radios and digital transmission group (DTG) network interfaces. It has adaptive forward error correction (FEC) capability that improves DTG quality and reliability.

##### **High Capacity Trunk Radio (HCTR):**

The objective of the HCTR program is to provide a trunk radio capable of a minimum data rate of 45 Mb/s to support ATM switching. The HCTR will serve as the next generation line of sight (LOS) radio for the Army's battlefield communications systems. When integrated with other battlefield switching platforms such as the Warfighter Information Network's Future SEN, ATM Hub Switch and Radio Access Point, the HCTR will also extend wideband integrated communications services to highly mobile forces at echelons, brigade and below.

For the Division XXI AWE, the HCTR (-) will served as the trunk radio connecting ATM switching under dynamic battlefield conditions. The version of HCTR (-) used in the AWE is a modified AN/GRC-222 radio mounted along side the current MSE LOS radio, the AN/GRC-226. A total of eight radios were used in the network to support the four NCS ATM links.

### **Global Broadcast System/Battlefield Awareness Dissemination Distribution (GBS/BADD):**

The GBS/BADD is a prototype global broadcast system with associated information management system. GBS has the capability to broadcast large volumes of critical battlefield and national data information from an injection point to receive stations at designated brigade and battalion TOCs. It is designed to provide an efficient and seamless information management infrastructure for the warfighters. During the DAWE, there was a lack of theater injection support on site at Fort Hood. To offset this shortcoming, leased circuitry was used to provide reach back to the primary injection point located at the Pentagon's Joint Information Management Center. In theater filter links were used to provide a connection means for the various data sources to the Information Dissemination Server (IDS) located at the Fort Hood.

The Division configuration of the system consists of the Warfighter Associates (WFA), an IDS, a Primary Injection Point (PIP), leased circuits for reach back, and leased satellite access. The WFAs are deployed in the lower echelons (BDE) where they are used to view theater data and also request archived data. The IDS, which is the heart of the entire system, consists of a Sun Sparc 3000 Unix based computer with a 128 Giga Byte hard drive and a FORE ATM switch (card).

Currently Global Broadcast Service/Joint Program Office (GBS/JPO) is funding the plans for GBS and the Defense Advanced Research Program Agency (DARPA) is now funding the plans for BADD. For all future exercise participations and further developments, the supporting agencies are providing all necessary coordinations and arrangements for GBS/BADD.

The concept of GBS/BADD has tremendous potential on the battlefield. It provides the capability to broadcast required or commonly requested battle command information (BCI) from multiple sources to forces that are engaged in a battle at the tactical levels. This relieves the demands of volume on the communications network. However, it cannot transport large amounts of BCI at high rates. The GBS/BADD is capable of broadcasting many types of data files to multiple users as well as off-loading receive only type data from terrestrial and space based communication systems. During the DAWE, the commander at each TOC had the capability to receive both national and tactical information. There are three ways to receive information through the GBS/BADD system. The first method allows commanders to receive national archived information, such as, National Imagery and Mapping Agency (NIMA) digitized maps, by sending a request through

the information dissemination server (IDS) which is networked with many more national data bases. In the second method, through the All Source Analysis System-Remote work Station (ASAS-RWS), the commander and staff set filters related to the commander's priority information requirements (PIR). When information that applies to a PIR is received at the IDS, it is automatically broadcast that information to the requesting commander. In the third method, information is also broadcast on a periodic basis to all Warfighter Associate (WFA) workstations on the battlefield. For example, weather updates might be sent twice a day at a specific time.

GBS/BADD takes advantage of its capability of broadcasting many types of data files to multiple users as well as off-loading receive only data from terrestrial and space based communication systems to relieve network load. These capabilities facilitate the allocation of communications assets to critical C2 functions required by commanders and staffs at all levels.

### **Near Term Digital Radio (NTDR):**

The Near Term Digital Radio (NTDR) is a state-of-the-art radio that provides wideband data communication in the UHF frequency band. NTDR also supports the routing of data within the network. Transmitted data is encrypted, protected with forward error correction and detection codes, and then modulated onto a RF carrier. The radio operates in a frequency band of 225 to 450 Mhz in discrete tuning steps of 0.625 Mhz. Direct sequence spreading at a chip rate of 8.0 Mhz is used to enhance performance with respect to multipath, jamming, and enemy interception. The point-to-point instantaneous channel information rate is 288 KBPS. The NTDR weighs approximately 21 pounds. The NTDR can be installed in the Enhanced Position Location and Reporting System (EPLRS) mounting base and is compatible with the EPLRS power cable. The Network Management Terminal (NMT) functions within the network to monitor/modify the operating parameters of the network. The NMT software is hosted on a common hardware-software version - two (CHS-2), which is a ruggedized SUN Sparc 20 computer workstation with a SUN Solaris operating system.

For the DAWE, the NTDR displaced the surrogate data radio (SDR) - from the TF XXI AWE - in the brigade. It provided a high data rate communications link between division tactical operation centers (TOCs), thereby supporting TOC to TOC Army Battlefield Command Systems (ABCS) traffic. Fifteen NTDRs - of limited functionality - were made available to support the required DAWE communications architecture. Also, there were two

NTDR Network Management Terminals - of limited functionality - that were deployed to monitor the NTDR data network. Twelve of the NTDRs were placed in the network TOCs to include the Army Airborne Command and Control System (A2C2S) and the Commander's Command and Control Vehicle (C2V). However the static communication architecture of the DAWE did not provide for these platforms to move from their fixed positions. Consequently, the NTDRs installed on these platforms were operational throughout the DAWE but not assessed in any on-the-move operations.

The frequency separation restriction associated with NTDR resulted in a very reduced pool of available Band I frequencies for MSE. The impact of the reduced MSE Band I resource was offset during SIMEX II by the significant number of MSE links implemented over cable. This situation highlights a potential problem for future spectrum usage. If a MSE network is implemented in the future but with all MSE links implemented over the air, and NTDR and MSE Band I continue to share the same band and same geographic space, there may not be sufficient spectrum to support both systems. In addition to long-term frequency authorization and planning issues, there are also some COMSEC concerns. The COMSEC key played for DAWE is for training purposes only. Lastly, NTDRs left at Hood after DAWE will require some additional training as the radio and NMT functionality is increased.

#### **Network Management (NMT):**

The Army's interest in network management has elevated with the growing complexity of networks and increased dependence for information exchange. Managing that complexity and voluminous information with today's tools only provides solutions to management over specific classes of resources, resulting in islands of management subsystems. This now causes us to re-focus our primary goal for network management—a goal that would bring all of the management subsystems together to provide a defined point of control for managed telecommunication networks. With the advancements in technology and increased user requirements, we must have active effective control of the network. Effective control is required to provide the Warfighter an integrated digital telecommunications network that supports war-fighting systems and assures C2 decision cycle superiority.

The TF XXI and Division XXI AWE were used as focal points for network management (NM) data collection. The nature of these events brought together all the appropriate digitized equipment and communications architecture on which to base analysis and observation of developing network management functionality. In the course of AWE

maturation, NM was divided and separately reported for the local area network (LAN) and the wide area network (WAN).

In general, a LAN is a network located in a limited geographic area that maintains the same network protocols and network transmission methods throughout the network. The common definition of a small geographic area is an area not exceeding five kilometers, end to end. A local area network may consist of multiple subnets (smaller area networks) connected together with network devices that originate/terminate the flow of information from one subnet to another subnet. Sometimes, WAN protocols such as X.25 are used in these small geographic networks.

In general, a WAN is a network that encompasses a larger geographic area and may use multiple network transmission means and protocols in different parts of the network. Generally, a wide area network consists of multiple local area networks connected together with varied network transmission media, usually at different transport speeds and protocols.

Network management for the DAWE provided an initial glimpse of how network management will be conducted for the Warfighter Information Network (WIN).

#### **Local Area Network (LAN) Management:**

The Tactical Operations Center (TOC) LAN provides Command and Control (C2) for the Warfighter over the tactical internet (TI). Army Battle Command Systems (ABCS) and other off-the-shelf host machines provide the software applications necessary to execute C2 on the battlefield. The TI network management must provide the tools to configure the network devices such as: routers, ether switches, hubs/concentrators, and bridges. It must also provide the following network services: Domain Name Service, messaging, collaborative planning, video teleconferencing, resource allocation, addressing, security, routing, video switching, LAN Configuration, Management and Troubleshooting. These are all the responsibility of the TOC LAN manager (TLM). It is planned that soldiers will fix physical faults not involving software modifications. Thus, the primary focus for the TLM is fault management. Configuration management and the software fixes for modifications to the network are primarily contractor support. The TLM requires a unique suite of equipment to adequately perform this complex job. For the DAWE, the available tools to do this work consist of various network monitoring software packages operating on a notebook computer with a network interface card (LAN Management Terminal), and a cable tester. One of the most difficult tasks to accomplish under this initiative is the training of

EXFOR soldiers. This multitude of training consists of: the basic concepts of LAN administration and management, basic and complex functions of the UNIX (SUN Solaris) Server, Network Management, Internet Fundamentals, WAN/LAN interfaces/architectures, switching and routing programming and protocols, cabling techniques, repair, troubleshooting, Automation Security and Firewalls, and the distributed computing environment necessary to support ABCS Interoperability requirements.

The DAWE allowed Team Signal to observe many communication systems. In observing the ABCS/LAN Management functions in the TOC one might recognize that the Signal soldier was more involved with the GPU systems, mainly as administrators. In being the administrator of the LAN in the TOCs, it wasn't good enough to validate that a link was available to send the data. The commander and staff asked many questions: "did the data make it to the distant end; what happen to it if it did not; why is the data taking so long to reach the distant end; why can I not send the data or why is the system appearing not to work, and what is this data or it appears that some of the data is missing. Tools must be provided to the Signal staff to assist the in answering these questions. Information dominance for a digitized force is critical in winning the battle. It is no longer great that the pipe is there (bandwidth is available), but the implementation of security tools (hardware and software) and TTPs must be implemented for/by the Signal Corps to assure data integrity.

#### **Wide Area Network (WAN) Management:**

The DAWE network was deployed from the WAN "backbone" down to the division-/brigade-level TOCs and their respective LANs. The DAWE network consisted of the Mobile Subscriber Equipment (MSE) network, along with the main initiatives of the High Capacity Trunk Radio (not the objective radio) (HCTR-) and the use of Asynchronous Transfer Mode (ATM) switches at the Node Centers (NCs) and the Small Extension Nodes (SENS).

Because of the increase of data across the network, the DAWE communications architecture demanded larger communication paths for the WAN. For DAWE, highest data rate path and not the shortest path prioritized the paths. If one path is not accessible, then an alternate path out of the TOC was automatically selected to continue data transport. Every TOC had a router that determined which one of four different paths to pass data across the WAN. The Asynchronous Transfer Mode (ATM) Small Extension Node (SEN) is the largest path and provides a data path of 768 kb/s from the TOCs. This is also the primary path for data transmission. The High Speed Data Link (HSDL) SEN is the secondary

path and provides a data path of 256/128 kb/s from the TOC. The Near Term Data Radio (NTDR) is the third path and provides a path of 288 kb/s (shared by the number of radios transmitting at one time). Lastly, the Tactical Packet Network (TPN) is the last means of passing data and operates at 16 kb/s.

The main signal units involved in the DAWE were the 124th Signal Battalion of the 4th Infantry Division and the 3rd Signal Brigade from III Corps. The 124th Signal Battalion was the focus of the DAWE as it soldiers and leaders operated and maintained the DAWE network. Both units' operations staffs planned and managed their respective MSE networks with their legacy network management systems, primarily the Network Planning Terminal (NPT) and the Packet Network Management Central (PNMC). Contractor support to these units was provided to assist in operating COTS network management systems.

The MITRE Corporation, as the primary supporting contractor, used their engineers as the main architects and managers of the DAWE experimental network. The main network management product that MITRE provided was a network management system called Simple Network Management Protocol (SNMP), built by Castle Rock Corporation. It provided a basic monitoring capability and was used by MITRE for WAN and LAN management shows device reach ability to objects with an SNMP agent residing on them.

The Project Manager (PM) Warfighter Information Network-Terrestrial (WIN-T), along with the GTE corporation, provided the Network Management Tool (NMT) to monitor the Mobile Subscriber Equipment (MSE) WAN. (The NMT is the precursor to the Integrated Systems Control (ISYSCON)) The NMT is still in the mode of getting NMT/ISYSCON prepared for the Initial Operating Test and Evaluation (IOT&E) in March 1998. Both the 124th Signal Bn and the 3rd Signal Bde used the NMT in these initial stages, as it is a preview of the ISYSCON system. PM WIN-T also provided the Commercial-off-the-Shelf (COTS) network management system, Sun Domain Manager (S-DM) to manage the "edge" router network.

The NMT did show the WAN view, with the 124th Signal Bn monitoring its WAN network, and the 3rd Signal Bde SYSCON monitoring both the 16th Signal Bn (Corps Area Bn) and the Division's network. There was an attempt to have the two Bn's monitor each others' networks, but this feature was not operating correctly for these two units. The 3rd Signal Bde was able to see both corps and division networks. This view provide a basic Up/Down operational status of the NCs and SENS, and it gave

a link status by Digital Trunk Group (DTG). The NMT also offer a graphical link history of up/down status for network managers to conduct performance analysis.

## **Demonstrations:**

### **Tactical Personal Communications Services (TAC PCS):**

During the DAWE, GTE and Lucent Technologies were given the opportunity to demonstrate a capability they jointly developed for the tactical environment which involved integrating digital wireless cellular phone technology into the existing Mobile Subscriber Equipment (MSE) system. This technical demonstration was observed and reported by the BCBL (G) with respect to its impact on the Division's current tactical deployment of communications. The thrust of this field demonstration was to show how the proposed suite of tactical personal services (TAC PCS) equipment provides wireless voice communication at the TOC. The PCS terminals consisted of a modified Lucent commercial product that provides the over-the-air interface to wireless users for voice and a Base Station Controller (BSC) designed specifically for tactical systems. The BSC provides initialization, control, and administrative support for the PCS system. A GTE tactical product, the Switched Multiplex unit (SMU), is tailored to interface to the Lucent BSC and provide the interface into the Division's existing MSE system. For DAWE, GTE/Lucent replaced the SB 4303 switchboards in three of the EXFOR's SENs with the SMU switch, Call Service Positions, Lucent PCS Base Station and BSC. These modified SENs supported both the wireless and wired subscribers at the TOC. The EXFOR was issued fifty QUALCOM PCS handsets for demonstration of wireless system capability.

The TACPCS terminals were placed at 4ID, 1st Brigade and 3rd Brigade Command Posts (CP). This provided a PCS coverage over all the DAWE CPs. The coverage for each of the TACPCS terminals covered approximately 8 to 10 Kilometer. Although they covered the DAWE area of operation the TACPCS systems were not setup to support roaming. When a subscriber using one of the 50 handsets made their first call, they would automatically be affiliated to the TACPCS SMU switch. The problem was when the user moved out of range of the TACPCS terminal providing them service. The subscriber would then fall into the coverage of the other TACPCS terminal. They would receive a good RF signal on the handset but they would not receive any phone calls until they placed a call, which would affiliate the subscriber to the other TACPCS terminal. This problem was well understood by 4ID before the DAWE. To solve this problem would have required both the terminals to operate on the same PCS Base Controller.

TACPCS did provide wireless capabilities that could decrease the time and cost establishing communications in a command post or operation center. The TACPCS technology could also, provide local phone service quicker in initial deployment sites, airfields, and logistical sites establishments.

TACPCS demonstrated the ability to integrate a commercial PCS capability with the tactical MSE network, however, PCS Frequency and Security issues still require solutions before this capability could be fielded as a means for reliable secure communications.

### **High Speed Multiplexer (HSMUX):**

GTE Government Communications Systems Division has developed a technology built into a High Speed Multiplexer (HSMUX) circuit card that increases the bandwidth of the current deployed MSE systems. The HSMUX is an experimental, commercial off the shelf (COTS) circuit card, capable of providing Battlefield Video Tele-Conferencing and higher speed data transfer within the current ACUS. Preliminary demonstrations of this technology have been successful in showing that the HSMUX technology can be used in existing SEN, NCS, LEN, and AN/TTC-39 shelters without any hardware modification.

The complete HSMUX system is comprised of two circuit cards. The first card is a four port serial connection card. It will support data rates of 64, 128 and 256 kb/s. The second card is a cable access card. This card provides RS-422 user connection. Together these cards work in synergy to provide the warfighters with the capability to upgrade the standard 16kb/s channel that the Mobile Subscriber Equipment (MSE) uses to a bandied that suits their needs, providing it does not surpass the capability of the card supplement which is 64-256 kb/s.

In the DAWE communications architecture, the MSE switch configurations to support HSMUX had to have modifications to their standard. All the Digital Transmission Groups (DTG's) that were used in conjunction with the HSMUX were modified from a standard 256 kb/s DTG to a 1024 kb/s DTG. Also, each of the DTG's had to have their HSMUXs routed over to a central MCU for control purposes.

The experimentation approach for the HSMUX was to insert this technology into the Mobile Subscriber Equipment (MSE) network supporting the DAWE. This experimentation will be used by the BCBL (G) to determine the effectiveness of the HSMUX in increasing bandied of MSE

The resultant data gathered, was consolidated and analyzed at the end of the evaluation period. A separate HSMUX Final Report cross-referencing all of the issues outlined in the evaluation plan was



developed and provided to the Warfighter Rapid Acquisition Program (WRAP), ARSARC for program funding consideration.

#### **Battlefield Video Teleconferencing (BVTC):**

This initiative was sponsored by Battle Command Battle Lab (Leavenworth) and supported by the BCBL (G) under the title, Collaborative Virtual Environment (CVE). The intent was to evaluate how collaborative planning was used as a “tool” to assist the division command and staff in the decision making process. The focus was on how collaborative planning tools enhance information dissemination across the battlefield. This initiative was listed under the heading of Digitization because it has technical implications in how the CVE is achieved and the communications infrastructure that is being employed to support it. There was no formal material assessment of the equipment used to accomplish this made by the BCBL (G). Primarily BCBL (G) provided technical assistance to the 4ID on how to support the initiative. This initiative provided no collaborative planning tools (equipment) to be used for evaluation. The results of BVTC analysis relied on what equipment was currently being used by the EXFOR III Corps and 4ID units.

The Division XXI 4ID G2 has explored the use of CVE in intelligence tasks; however, it has been recognized that CVE has a wider potential for the Army as a C2 tool. CVE can provide an infrastructure for the integration and use of collaborative tools such as audio and video conferencing, information sharing,

### **Battle Command Battle Lab (Huachuca)**

#### **Combat Synthetic Training Assessment Range (Combat STAR):**

WRAP (MAJ Schneider, Futures Directorate NSTO, 879-0817). Effective 1 March 1998 Combat STAR was assigned to the Futures Directorate.

#### **Analysis and Control Team (ACT) Enclave:**

WRAP (MAJ Debolt, ATZS-BL, 821-4657). Created as an alternative to the old TYK-10 shelter (in the TOE), this SICCUPS was designed to be the hub for the ACT operation. Designed along the lines of the early DISE shelter, it housed the MI Company's two ASAS-RWS and organic communications (MSE, tactical internet, SINGARS and appliqué; it also provided an interface for the Trojan Spirit). Routers managed the flow of information between the Common Ground Station (CGS) and Unmanned Aerial Vehicle (UAV) Ground Control Station (GCS) and into the brigade ATCCS LAN. An additional NCO

supervisor's console could be dismounted from the shelter and placed in the tent vestibule. An intercom system linked UAV, CGS, and All Source Analysis System (ASAS) operators to facilitate rapid cross-cueing and teamwork. The ACT Enclave will take part in an OPTEC Limited User Test that will test the ASAS architecture from Bde to Corps level. As the ACT Enclave is ASAS RWS-based and located at Bde-level, it will be a focus of the test. This test will use a DIA and TRADOC certified scenario to measure the throughput of message traffic and the operator's ability to analyze information using the ACT Enclave. In an effort to save resources, this test will be accomplished in conjunction with the ACE/RWS Limited Users Test with the 4th ID programmed for November 1998. The Battle Command Battle Lab has produced a full POI and operator manuals for the ACT Enclave system along with the doctrinal publication FM 34-80, which speaks to its employment within the brigade. The Directorate of Training and Doctrine has prepared TSP a draft for the system. Experience suggests that the basic system NET (not inclusive of the RWS workstation) is about five days. BCBL has also produced a POI and manuals for the ASAS-RWS V.3. The Intelligence Center's ASAS NET team would perform the training during fielding. This training would occur concurrently with the CGS NETT.

#### **Dynamically Distributed Overlays:**

CEP (MAJ Mixon, ATZS-BL, DSN 821-3530) Supports the warfighter requirement to provide terrain, weather, and combat information to the commander in near-real-time in order to support critical decisions that enhance both information and maneuver dominance on the battlefield. The dynamic distribution mechanism will provide the capability to disseminate combat sensitive information in a near-real-time manner across ABCS functional areas and within the intelligence battlefield functional area.

#### **Joint Collaborative Target System:**

CEP (MAJ Davis, ATZS-BL, DSN 821-4668) Assures the commander of automated target folder updating, providing him with accurate and timely targeting data as the battle evolves. This capability simplifies his battle command challenges by identifying those organization assets most critical to the targeting requirements at hand and, therefore, most deserving of commander focus and attention. This CEP provides access to continuously-updated target folders and directly supports rapid mission planning, decision making and operations planning. The dynamic distribution mechanism portion of this proposal supports this capability by providing the commander with the necessary target information in near real time.

### **Automated Intelligence Preparation of the Battlefield /Automated Decision Support Template:**

(Automated IPB/DST). CEP (MAJ Mixon, ATZS-BL, DSN 821-3530) Demonstrates the capability to rapidly tailor and display automated IPB products; collaborate with operations, fire support, and intelligence planners; and build, modify, and distribute the Decision Support Template within the ATCCS system network.

### **Army -USMC C3I Interoperability:**

CEP (MAJ Mixon, ATZS-BL, DSN 821-3530) Takes the Object Request Broker technology developed under the FY96 ACT project and extends its Distributed Data Dissemination System (D3S) to encompass USMC C3I capability. This allows the commander to partition and hand off relevant data to appropriate users including joint and coalition forces systems in a real-time and near real-time manner for both situational awareness and command decision making.

### **Automated Commander's Critical Information Requirements:**

(Auto CCIR) CEP (MAJ Mixon, ATZS-BL, DSN 821-3530). The automated CCIR system enhances the battle command capabilities within the decision cycle by integrating reconnaissance and surveillance plans that are linked to the commander's rapidly evolving scheme of maneuver and fire support concept—a critical capability within digitized decision cycles. The CCIR tool recognizes commander decision points, provides commander feedback, and recommends CCIR changes consistent with the changing battlefield situation. The CCIR tool provides the commander with the capability leverage relevant information in conducting rapid mission planning, preparation, and execution in real-time.

### **Pirate Eye:**

CEP (Ms Chavez, ATZS-BL, DSN 821-4674). Pirate Eye will conduct live-fly UAV operations at an instrumented range area to assess the susceptibility of UAV air and ground systems to hostile exploitations for intelligence, lethal targeting, and electronic attack and to identify operational and technical countermeasures to reduce or eliminate potential threats.

### **FIRESTORM:**

ACTII (MAJ Grier, ATZS-BL, DSN 821-4677) The Federation of Intelligence, Reconnaissance, Surveillance, and Targeting, Operations, and Research Models (FIRESTORM) was originally a Battle Lab ACTII program designed to support the Division XXI Advanced Warfighting Experiment. It has since continued to evolve into a simulation prototype initiative designed to meet the interim requirements prior to the fielding of WARSIM 2000. FIRESTORM

is a modular simulation/C4I stimulator made up of three parts; the constructive simulation, a de-aggregator and the sensor visualization models. FIRESTORM can use any of the contemporary constructive simulations such as CBS, JANUS or MTWS. The de-aggregator is called HRSS (High Resolution Simulation Stimulator). HRSS takes aggregate entities from constructive simulations and produces and maintains individual entity level resolution. HRSS is Distributed Interactive Simulation (DIS) compliant, capable of both reading and producing Protocol Data Units (PDU). This entity level information is then available for use by various visualization models (e.g. JSTARS, UAV and an unclassified SIGINT model) to create unclassified, high resolution, simulated sensor output. FIRESTORM is currently comprised of 11 models. They are the Intelligence/Electronic Warfare Common Sensors (IEWCS) model, the Guardrail Common Sensor (GRCS) model, the Integrated Intelligence Processing Facility (IPF) model, the Joint STARS Simulation (JSS) model, the Army Aviation model, the Long Range Surveillance (LRS) model, the Enemy Prisoner of War (EPW) model, the Advanced Synthetic Aperture Radar System (ASARS) model, the generic Signals Intelligence (SIGINT) model, and the Counterfire Detection Radar (CDR) model. FIRESTORM also provides entity information to the Unmanned Aerial Vehicle (UAV) simulator, the Intelligent Minefield simulation (RAPTOR), and the Synthetic Imagery Generation System (SIGS). Firestorm stimulates the following C4I systems: Common Ground Station (CGS), Tactical Control System (TCS), ASAS RWS, and ASAS Block I Single Source. The goal for FY98 is for the integration of FIRESTORM into the Battle Command Training Program as a supplement to the existing intelligence models currently used. FIRESTORM adds realism and fidelity to intelligence play and enables the stimulation of emerging Force XXI C4I systems such as those mentioned above. Additionally, FIRESTORM will be used to support the III Corps WFX/AWE in December 1998.

### **Joint Intelligence Surveillance Reconnaissance (JISR) for Tactical Land Forces:**

ACTD (MAJ Crawford, ATZS-BL, DSN 821-4665) This ACTD will address the issues of technology integration and warfighter comprehension in providing enhanced battlefield awareness to the maneuver brigade echelon. It will utilize mature technologies found in select ISR processors, coupled with software enhancements to establish a standardized protocol between them. This creation of a common data processing structure will refine database connectivity and data correlation to facilitate the production of a time-sensitive tactical read of the commander's entire battlespace. The JISR ACTD will follow a

five-phase roadmap encompassing the FY99-02 timeframe to address the following activities:

**Phase I. Design: (FY99)** Determine future information requirements for digitized tactical echelons. Examine ISR operational functions and architectures associated with joint sensor tasking and intelligence fusion relevant to early-entry force projection operations.

**Phase II. Prototype: (FY00-01)** Prototype a "Leave Behind" system, and measure ISR performance against objective requirements in both live and simulated environments.

**Phase III. Field: (FY01)** A demonstration force will conduct both home station training using the JISR system as well as deploy to the NTC or other CTC to further test system utility. These initial demonstrations will be followed-up by system refinement and re-evaluation until the objective capabilities are achieved.

**Phase IV. Deploy: (FY02)** As a Capstone, the designated experimental force will deploy to Southwest Asia as part of a joint CENTCOM exercise with the JISR prototype capability to fully measure its overall warfighter utility.

**Phase V. Pre-position and Sustain: (FY02-04)** Following the CENTCOM exercise, a leave-behind or "Residual" capability (the JISR system) will be left to the demonstration force for a two-year period to conduct internal experimentation and evaluation.

The fundamental point on this ACTD is the need for US forces to acquire and hold an Information Dominance over any potential adversary. The JISR ACTD will focus on the identification and utilization of operational synergies that can derive from the further integration of emerging ISR technologies designed for tactical echelons. The intent is to provide an ISR supplement to the technology overmatch being realized in maneuver and fire-support engagement systems in order for these to attain their optimal capability. At this time the JISR ACTD is only a proposal for an FY99 start. The one major issue concerns the development of a funding strategy by the Materiel Developer (CECOM). They are expected to work this issue in January 1998.

#### **Common Battalion-Level Battle Command System:**

ACT II (MAJ Mixon, ATZS-BL, DSN 821-3530). The objective is the development of a prototype system that meets the command, control and intelligence needs at the maneuver battalion-level. The system will be both Common Hardware-Software (CHS) and Army Technical Architecture (ATA) compliant. Currently, the maneuver battalion commander and his staff are the last level to provide combined arms

planning, command and support to company commanders and platoon leaders fighting the direct fire battle. MCS and ASAS-RWS as they currently exist, do not meet maneuver battalion-level automation requirements. This project will provide operations and intelligence software decision support system for essential battalion-level command and staff processes and provide access to digitized products from higher, adjacent, and subordinate elements. The system will facilitate leading, training, planning, and monitoring operations. It will maintain and extend situation awareness. It will operate within the battalion's FM tactical communications environment.

#### **III Corps Warfighter Exercise:**

(III WFX) AWE (MAJ Debolt, ATZS-BL, DSN 821-4657; MAJ Thompson, ATZS-BL, DSN 821-4667P). The US Army III Corps is currently defining the requirements necessary to conduct a digital Warfighter exercise in a simulated digitized corps command and control structure. The BCBL (H) will provide the technical assistance necessary to portray the seamless integration of multidiscipline intelligence sensors from national through the tactical level (within the defined dollar constraints). There is a minimum requirement for the Joint STARS and UAV systems to participate in the III WFX utilizing simulation systems such as FIRESTORM and TACSIM. Currently, no such simulation capability exists for Joint STARS use in exercises or experiments. The BCBL (H) is working with PM Joint STARS, TSM Joint STARS, and CECOM I2WD to rapidly develop a robust workstation capable of providing Joint STARS imagery products and messages in a networked simulation environment. The fielding of such new equipment will be necessary to portray and support Joint STARS, as well as the ASAS-RWS systems, during simulation exercises. The new software and interfaces for the CGS and ASAS-RWS workstations, will necessitate refresher or new equipment training team (NETT) in some form of field support training package. As the requirements become more defined, the Battle Lab will assist in coordinating the training efforts for operators of the transportable CGS and ASAS-RWS

### **Battle Command Battle Lab (Leavenworth)**

#### **Projects:**

##### **Cognitive Engineering:**

The STO provides a focused examination of battle staff decision processes at brigade and above, and develops a set of products for guiding (1) Army R&D investments for digitization and staff officer training,

(2) Battle Lab experimentation planning, and (3) force development planning under Army After Next (AAN). POCs: Major Duane H. Riddle, DSN 552-8042, riddled@leav-emh1.army.mil

**Defense Advanced Research Projects Agency (DARPA) Command Post of the Future (CPOF):**

DARPA's Command Post of the Future Project is a five year R&D program to design, develop, test, and evaluate a prototype Joint Command Post of the Future. The entire CPOF Team consists of an Integration Team (lead agencies), Candidate Technology Providers, Operational Advocates, and Consultants. DARPA asked BCBL(L) to lead the Operational Advocates coordination effort. BCBL(L) identified Third Army to provide Joint insight, and possibly act as the eventual operational testbed. The Command Post of the Future Program goal is to improve the speed and quality of command decisions while improving the mobility and survivability of the command complex. DARPA's approach is to provide an intuitive, well integrated, easy to use, decision-centered, information environment where a commander, and staff can quickly understand the changing battlefield situation, select the best course of action, communicate that COA to the implementing units, and monitor the execution. Key technologies targeted for development are: integrated visualization environments; comprehensive human-computer and human-human interaction capability (through speech and gesture understanding, language understanding, dialog and visual collaboration); a command post context tracking and dialog manager; an integrated suite of knowledge bases, intelligent agents, plan sentinels, and information processing assistants; and a modular, portable suite of hardware and software components. POCs: Major Mark Huron, DSN 552-8041, huronm@leav-emh1.army.mil

**Future Operational Capability (FOCs):**

FOCs are statements of operational capability required by the Army to achieve the vision articulated in the hierarchy of concepts (TP 525-series) and to maintain military dominance over the operational environment in which it is required to operate. A summary of desired future operational capabilities described in concepts approved by the TRADOC Commander is provided in TP 525-66, Future Operational Capabilities. The current version is dated 1 May 1997. This document is the control mechanism for requirement determination activities. It is the basis for a holistic appraisal of the current and desired future capabilities, which produces a future capability strategy. This strategy provides the authority to conduct studies and warfighting experiments to better understand desired capabilities and the means to achieve them. The objective of the

FOCs is to focus the Army S&T community towards capabilities, which will provide technological superiority over any potential adversary. FOCs are used within the Army Science and Technology Master Plan (ASTMP) process to provide a warfighting focus to technology base funding. FOCs are employed in Battle Lab S&T efforts. FOCs are also employed in the Army STO process as the yardstick of warfighting merit. POCs: Major Duane H. Riddle, DSN 552-8042, riddled@leav-emh1.army.mil

**Joint Battle Center (JBC) Integration/Participation:**

The JBC is a tenant in the Joint Training Analysis and Simulation Center (JTASC) in Suffolk, VA. The JBC falls under the direction of the J-8, as the Director for Force Structure, Resources, and Assessment. A Deputy Director runs it. This position is selected by the Director and is rotated among the Services; a warfighter operational background is required. A Senior Steering Group (SSG) assists the Director with JBC administration. The JBC provides a Joint Task force C4ISR facility and experimentation environment serving as a forcing function for joint interoperability. The JBC fosters rapid near-term insertion of technology, identification of impacts on doctrine and a learning and experimentation environment for joint warfighters and technologists. The JBC supports CINCs' requirements for interoperability. The JBC operates as the lead agency in the Federated battle Labs (FBL). The FBL is composed of all the Service Battle Labs. Experiments are nominated through the SSG; sources for nominations are Joint Warrior Interoperability Demonstration (JWID) successes, CINCs, and Service Battle Labs. The JBC then identifies and organizes the appropriate Service Battle Labs for participation in the experiment.

This effort is undeveloped, and as such, has not identified specific tasks for integration. However, BCBL(L) identified three critical areas of focus for successful integration into the JBC. They are:

1. Representation on the Senior Steering Group of the JBC. Although Battle Lab Integration Technology Concepts Directorate (BLIT-CD), a current SSG member, reports that BCBL(L) membership was approved at the first meeting, that approval is not indicated in the SSG minutes. BCBL(L) continues to pursue resolution through BLIT-CD.
2. Participation in Federated Battle Lab experiments and conferences with focused and integrated Future Operational Capabilities (FOCs). An ongoing effort in BCBL(L) is serving to focus our FOCs. This allows BCBL(L) to select which experiments it should (and should not) participate in.

3. Pursuing leading edge technologies to maintain connectivity. BCBL(L) is coordinating with the JBC to identify current and planned connectivity requirements. POCs: Major Mark Huron, DSN 552-8041, huronm@leav-emh1.army.mil

**Joint Operational Concept For A Command, Control, Communication, Computers, Intelligence, Surveillance, And Reconnaissance (C4ISR)**

**Capabilities-Based Headquarters:**

This requires the investigation of the full spectrum of capabilities for Joint Forces when executing the patterns of operations outlined in "Joint Vision 2010." It entails the identification of capabilities-based force C2 tasks, requirements, and capabilities. BCBL will develop a capabilities-based force C2 operational concept, followed by a JWE campaign plan. The effort focuses on the capabilities-based structure, joint interoperability, and warfighting C2 in regional unified commands.

**Rugged Portable Workstation Display Technology:**

DRS Electronic Systems proposes to demonstrate a display technology that will significantly improve direct sunlight color readability of hand held, mobile flat panel, active matrix LCD and other backlit transmissive display devices. The eleven-month, FFP program requires no government furnished equipment and is offered without profit. DRS will deliver two hand held, mobile, Pentium class light-weight workstations suitable for warfighting situations/environments. The technology that will be used stresses the use of sunlight assisted back lighting combined with sophisticated power management, thermal management, filter technology, special back light diffuser, and auto dimming circuitry. The benefit to the Army of implementing the low risk DRS technology will be immediately measurable to the individual warfighter and to the units that depend on the warfighter's cumulative input to the digital battlefield. The warfighter, whether at a command post or a TOC, will be connected to the digital battlefield with a full sunlight readable, color, portable, display with a battery life at least 20% greater than existing devices. An overall increase in operational capability will be achieved when a fully responsive flat panel or active LCD can be placed in the field. POCs: Major Elrin Hundley, DSN 552-8044, hundleye@leav-emh1.army.mil

**The Virtual Retinal Display for Mobile C4I Visualization Applications:**

Microvision will demonstrate to the Army Battle Command Battle Lab the operation of a prototype, full-color, binocular VRD operating at a resolution of 1280x1024 pixels and in a direct view mode (non-3D). The VRD will be packaged in a goggles-type, binocular configuration (head-worn), suitable for use

in military command, control, communications, computer, and intelligence (C4I) applications within Tactical Operation Centers, moving tracked vehicles, and airborne platforms, all of which require the interactive and collaborative display of visual information. Microvision will demonstrate that VRD technology can replace existing large workstation display monitors with personal, light-weight, head-worn displays. This will reduce equipment operator fatigue, reduce the effects of viewer nausea in a mobile environment, and increase operator efficiency and situational awareness. POCs: Major Elrin Hundley, DSN 552-8044, hundleye@leav-emh1.army.mil

**Digital Leader's Reaction Course:**

The Digital Leader's Reaction Course (DLRC) is a currently unfunded initiative to respond to guidance from Commander, TRADOC and Commander, CAC. The intent is to construct an environment that will expose audiences of various types (Command and General Staff College, Selective Command Program, or live-unit commanders and staffs preparing for Warfighter Exercises) to a low-overhead, rapidly reconfigurable, high-resolution battle simulation that is interfaced with ABCS. Leaders will be faced with intense, realistic, time-critical battle situations that require staffs to execute the Military Decision Making Process (MDMP). Leaders will be faced with realistic situational awareness conditions and must make several critical decisions in order to win. Detailed after-action reviews will allow leaders to assess their ability to exploit situational awareness to defeat the enemy by disrupting his decision cycle. Digital, audio, and video recordings contribute to a detailed after action review process to enhance learning and identify directions for improvement. BCBL(L) intends to leverage two CEPs: 98-6002 (ABCS-Simulation Interface) and 98-6003 (Course of Action Analysis - Simulation Interface) to contribute to providing this capability in the BCBL(L) ACT II residual – CGSC's Warlab. This is a collaborative effort between BCBL(L), TRAC's Joint Virtual Lab, and CGSC's Tactics department (CTAC). Initial goals are to demonstrate a prototype capability during Army Experiment 5's experimentation period (Jul-Aug 98). POCs: Captain John Gingrich, DSN 552-2365, gingrichj@leav-emh1.army.mil. For more details on this and other projects visit the BCBL homepage at <http://cacfs.army.mil>

**CSS Battle Lab:**

One of the original Battle Labs, the CSS Battle lab at Fort Lee, Virginia is responsible for the planning and conduct of warfighting experiments. The CSS Battle Lab works with other TRADOC Battle Labs, Centers, and Army schools in actions related to the Combat Service Support enduring battlefield function.

### **Army Experimentation Campaign Plan:**

CASCOM has been directly involved with both JV and BLITCD in the development of the Army Experimentation Campaign Plan. On 13 March, the CSSBL presented an overview of the CASCOM "Futures" plan to both JV and BLIT at TRADOC. The intent of this overview was to depict how CASCOM futures planning is integrated with TRADOC guidance. The CSSBL has selected POCs for AWE planning efforts along the Corps, Contingency and Strike Force Axes. The POCs are:

Corps AWE planning: CPT Zulma Guerrero, DSN 687- 1094, guerreroz@lee-dns1.army.mil

Contingency AWE planning: CPT Leo Verhaeg, DSN 687-1491, verhaegl@lee-dns1.army.mil

Strike Force Planning: LTC Charles Barham, DSN 687-1973, barhamc@lee-dns1.army.mil

The CSSBL POC for overall AECF planning efforts is MAJ Mark Arn, DSN 687-1793, arnm@lee-dns1.army.mil.

### **Division AWE:**

The final DAWF report is being staffed by TRAC and the TRADOC Proponents, and is expected to be approved and published in April 1998. Point of contact: LTC Chuck Barham, DSN: 687-1973, barhamc@lee-dns1.army.mil & MAJ Eric Smith, DSN: 687-1807, smithe2@lee-dns1.army.mil

### **Army After Next – AAN:**

CSS Battle Lab continued to make significant progress in inserting logistics play into AAN, and the CSA's vision of how the Army will look and fight in the time frame beyond Force XXI. Battle Lab representatives continue to build on the lessons learned from the previous series of AAN wargames and workshops, particularly the Tactical Wargame conducted at the end of last quarter. Work during the second quarter has focused on identifying enabling technologies that may have some utility for AAN forces, and preparation for the AAN Spring Wargame to be conducted in April. Some of the promising technologies being investigated are precision airdrop, airbeam construction, and modular logistics pods configured for various missions. The AAN Spring Wargame, the "Super Bowl" of the AAN project, focuses at the strategic level. Battle Lab and CASCOM AAN team members have been developing the research objectives of the game and designing the cell that will assess these objectives during the game. Points of Contact: MAJ Lynch, AAN Project Officer, lynchm@lee-dns1.army.mil, DSN 687-1808 and Mr. Robert Dienes, CSS Battle Lab Technology Advisor, dienesr@lee-dns1.army.mil,

### **Right Size DISCOM:**

The CSS Battle Lab has passed final documentation responsibilities to DCD-CSS and the functional DCDs. The CSS Battle Lab will continue to participate in a support role. DCD-CSS will spearhead the effort to document the "right sized" DISCOM to support the Conservative Heavy Division (CHD).

### **Force XXI Division design CoC/GOSC (5-23 Jan):**

LTG Abrams directed the TRADOC proponents to develop a 15K Division for near term (FY 2000) execution with emphasis on RC integration. This was in contrast to the CASCOM position briefed to GEN Hartzog in April 97. During the April briefing CASCOM proposed a time phased reduction for the strength of the DISCOM. This involved putting a full requirements based DISCOM on the ground in the near term (FY 2000). Over time, through the implementation of enablers and passbacks to Corps, the DISCOM strength would be reduced to 4321 (TRADOC cap) by FY 2010. (See Battle Lab Significant Activities Report dated 2 FEB 98) Consequently, CASCOM developed a new DISCOM cap of 4239 for the Mech pure and 4260 for the Armor pure in order to meet TRADOC's guidance of a 15K Division in FY 2000.

### **Force XXI Division design (Feb 98):**

CSSBL coordinated efforts to work several "what if" drills in preparation for tentative BOD decisions. These included re-looking the CAMB vs Pure issue, adding additional lift assets to the GSAB, removal of combat medics from the FSC's and implications of documenting an AR Div (vice MX as in the CHD base case). Official BOD guidance has not yet been released.

### **Force XXI Division design (Mar 98):**

The TRADOC CG presented his recommendations to the Army's Board of Directors and Army Chief of Staff on 18 Mar 98. The final division design decision is expected at the end of April or early May 1998. Point of Contact: MAJ Les Coleman, DSN 687-1694, colemanl@lee-dns1.army.mil CPT Shawn Feigenbaum, DSN 687-2373, feigenbs@lee-dns1.army.mil

### **Experimentation – CEPs:**

CASCOM submitted ten CEPs as Out of Cycle (OOC) candidates prior to the decision to discontinue the OOC process. They will likely be submitted as FY99 candidates in May. Subjects were as varied as Theater Support Command Validation, Base Camp Force Protection, Modular Ammunition Platoon Evaluation, and Blocking and Bracing for Containerized Cargo for use w/ PLS. Point of contact: CPT Leo Verhaeg, DSN 687-1491, verhaegl@lee-dns1.army.mil

### **Experimentation – ACTII:**

The ACT II program continues to be very beneficial to the CSS Battle Lab. Twenty-nine (29) proposals from industry/academia led to the award of six (6) projects for FY97 totaling approximately \$3.1 million dollars. The FY97 projects are Integrated Maintenance and Logistics Soldier System, Integrated Movement Tracking System (MTS) and Radio Frequency (RF) Tagging for Container and Vehicle Tracking and Monitoring, Competitive Algorithms for Computerized Training, Chemical Agent Water Monitor, Trauma Patient Simulation, and Integration of IDEEAS (Integrated Distributed Engineering Evaluation Analysis System) with the Joint Theater Level Simulation (JTLS). For FY98, sixteen (16) proposals from industry/academia led to the selection of five (5) projects totaling approximately \$2.0 million dollars. The FY98 projects are CSS Intranet Radar Responsive (R2) Tag, PLS Fuel Modular Concept, Single Source System for Power (SSSP), Sea State 3 (SS3) On-Deck Modular Causeway Section (MCS) Assembly Fixture, and CSS World Wide Web Enabler Tools.

Point of contact: Mr. Tom Burnette, DSN 687-2712, burnettet@lee-dns1.army.mil

### **WRAP Candidates:**

The Global Combat Service Support-Army (GCSS-A) is recommended for FY98 WRAP approval. The Forward Repair System-Heavy (FRS-H) and Movement Tracking System (MTS) are systems in question for FY98. CASCOT Directorates are looking ahead for potential FY99 WRAP candidates and ensuring that they have all the necessary products to include OPTEC evaluations and approved requirements' documentation. The CASCOT WRAP program is managed by DCD - CSS.

Point of Contact: CPT Mark O'Donnell, DSN 687-0039, odonnelm@lee-dns1.army.mil

### **Logistics Technology Workshop:**

The CSS Battle Lab team in conjunction with the Army Materiel Command, conducted a highly successful 7-10 Jul 97 Logistics Technology Workshop. The workshop was aimed at developing ideas for new logistics Science & Technology Objectives (STO), and Advanced Technology Demonstrations (ATD). Representatives from all the CASCOT DCDs, the CSS Battle Lab, all major AMC labs, and RDECs engaged in logistics-related technology work, were brought together at the Defense Systems Management College Deliberation Center (a state-of-the-art groupware laboratory fostering group interaction). Over 60 candidate projects were jointly reviewed, resulting in a list of 16 "best of the best Golden Nugget ideas". Results

were briefed on 3 Oct to Dr. A. Fenner Milton, Dep ASA (Research & Technology), who was given a sampling of four top-rated projects that came forward at the Workshop - Airbeam Shelter Technology, POL Quality Laboratory, Remote Asset Readiness Prognostics/Diagnostics System (RRAPDS), and CSS Wireless Extranet.

All of these projects (and several others) will be presented as proposed new STOs at the 5-7 May 98 STO/ATD reviews at HQ TRADOC. CSS Wireless Extranet has been retitled "Logistics C2", and is being formed into an ATD nomination; the first new CSS ATD (if approved) since the Total Distribution ATD in June 93. The Logistics Technology Workshop was a success in bringing DCDs and laboratories/RDECs together in developing new STO and ATD ideas.

The next step is to institutionalize the Workshop as an annual event. HQ TRADOC and HQ AMC are sponsoring a Logistics Technology Workshop in the July 98 timeframe, and will focus on CSS Future Operational Capabilities (FOC). The basic intent, per joint AMC/TRADOC agreement on 5 Mar 98, will be for a simple update sheet to be prepared for each FOC, focusing on FOC intent and near, mid, and long-term capability goals, as seen by the DCD combat developers. The materiel developers' laboratories and RDECs would review these from a technology perspective, commenting on feasibility of the goals, and proposing new technology capabilities as needed. The July 98 Workshop would then discuss and integrate these sheets as inputs to the next FOC update in Oct 98. Point of Contact: Mr. Robert Dienes, dienesr@lee-dns1.army.mil, DSN 687-0097

### **BAST Study of AAN Logistics:**

CSS Battle Lab is participating directly on a study by the National Academy of Science's (NAS) Board on Army Science and Technology (BAST) aimed at reducing demands on the logistics system for AAN systems and equipment. Chartered by the Dep ASA (Research and Technology), the BAST will examine a wide range of technologies that can lighten the force, improve power and energy sources, increase fuel efficiency, reduce munitions burdens through smart munitions technologies, and a variety of others efforts. The product will be an investment strategy and game plan for the Army to follow. CSS Battle Lab's Technology Advisor, Mr. Robert Dienes, is an invited guest to all BAST meetings.

Mr., Dienes has kept the BAST informed about AAN logistics technologies. He briefed the BAST 19-20 Aug 97 "kickoff" meeting and their 15 Dec 97 meeting, during which he summarized results of the AAN Tactical Wargame and the emerging AAN logistics

support concept. Most recently on 19 Feb 98, Mr. Dienes updated the BAST AAN Logistics Committee on what will probably be our final opportunity to do so before their report writing begins in earnest. In this briefing, the Battle Lab emphasized energy efficiency and alternate fuels as a key AAN enabler, followed closely by the need for ultra-reliable systems and prognostics; affordable fast sealift and airlift; and "pod-type" medical forward treatment facilities. Among the recommendations was the need for BAST to advocate an Army energy investment strategy, given that we are faced with an increasing number of propulsion systems, (e.g., hybrids, electric vehicles, fuel cells, etc.), coupled with an over-dependence on fossil fuels on the AAN battlefield. Point of Contact: Mr. Robert Dienes, dienesr@lee-dns1.army.mil, DSN 687-0097.

#### **Logistics Command and Control Advanced Technology Demonstration (ATD) Candidate:**

The Logistics Command and Control (LOG C2) ATD candidate is one of AMC's top ten Golden Nuggets designed to focus S&T programs toward logistics. The objective of the LOG C2 is to demonstrate logistics connectivity for the Distribution Based Logistics concept and seamless flow of supplies between the Battlefield Operating Systems (BOS) and the Army Standard Management Information Systems (STAMIS), from foxhole to factory. The ATD will provide software solutions; ensure compliance to the Joint Technical Architecture (JTA)/Common Operating Environment (COE) and interoperability with the Army Warfighter Information Network (WIN); and leverages communication developments to revolutionize CSS in the following areas; (1) Decision Support Tools (Planning), (2) Analysis, (3) Multi-Level Security, (4) Affordable Communications and (5) Systems Administration.

The CSS Battle Lab in conjunction with CECOM conducted a series of briefings/workshops to jointly develop a leap ahead sustainment capabilities ATD package. The first LOG C2 workshop was held on 25-26 Feb 98, in the CSS Battle Lab, Fort Lee, VA., to discuss the current conceptual stage of the ATD and to meet with the CASCOM community to further define CSS requirements. Members from TSM CSSCS, PM-ILOGS/GCSS-Army, CECOM, ISD, FBCB2 and the CSS Battle Lab participated in the working group; they provided critical logistics requirements and further defined the ATD Exit Criteria. The second LOG C2 workshop was held on 16-17 Mar 98, in the CSS Battle Lab, Fort Lee, VA. The first day of the workshop, CECOM briefed COL Kennedy, CSS Battle Lab Vice-Director, COL Shimko, ISD Director and COL Edmonds, TSM CSSCS, and received additional guidance. All three Colonels agreed to endorse the ATD, and a letter of

endorsement was drafted. On the second day, the Exit Criteria were revisited/revised to meet the Council of Colonels guidance.

The ATD will be briefed at the AMC STO/ATD Review on 25-27 Mar 98, Washington D.C. Future plan include briefings to LTC (P) Mansell, DCSLOG, and COL Brokenburr, DAMO FDL, on 30 March 98, at the Pentagon, Washington D.C. and COL Mandeville, member of the TRADOC Warfighter Council, on 31 Mar 98, at HQ TRADOC. Point of Contact: CPT Zulma Guerrero, DSN 687-1094, guerreroz@lee-dns1.army.mil Ms. Tanya Bui, DSN 687-1202, buit@lee-dns1.army.mil

#### **Depth and Simultaneous Attack Battle Lab:**

The Director of the D&SA BL is the Commanding General of the United States Army Field Artillery Center and Fort Sill, MG Leo J. Baxter. The Chief of the D&SA BL is COL Sammy Coffman and the Deputy is Mr. George A. Durham.

The Depth and Simultaneous Attack Battle Lab was among the original battle labs chartered by CG, TRADOC in June 1992. The D&SA BL mission is to provide overall direction, oversight, and horizontal integration for the total depth and simultaneous attack battle dynamic area to meet the warfighter's needs through Horizontal Integration, Experimentation, Rapid Acquisition, and High Tech Insertion across Doctrine, Training, Leader Development, Organization, Materiel, and Soldiers. Ongoing experiments are reflected below:

#### **Concept Experimentation Programs:**

CEP 0601 Command and Control Tactical Trainer. The focus of these demonstrations and experiments is to link actual and simulated systems together to assess adequacy of interfaces, communications and data requirements. Each demonstration will assess different aspects of field artillery counterfire operations that must be performed by cannon and MLRS battalions. Of particular interest will be counterfire targets acquired and reported by the Q36/37 counter mortar/battery radar system. Additionally, the communications link between existing command and control systems and the emerging Advanced Field Artillery Tactical Data Systems (AFATDS) will be assessed to insure continuity of fire support capability as new systems are integrated. Products of these assessments will be used to further refine the requirements for future systems supporting the attack of counterfire targets and to refine interface requirements between AFATDS and legacy systems. POC T. J. Johnstone, DCD TSM-RMS, DSN 639-5205 johnstonet@usafas.army.mil



#### **CEP 0604 Crusader Operations on the Digitized Battlefield.**

The Army is developing a next generation self-propelled howitzer system, Crusader, to be fielded in the near future (LRIP is scheduled to begin 3QFY04). The system consists of two primary components, a resupply vehicle and a self-propelled weapons system, and will be capable of dramatically increased rates and ranges of fire as well as increased mobility compared to the current system. Additionally, Crusader will incorporate the latest electronics equipment for battlefield identification, system status reporting, command and control, communication, and significantly improved onboard information processing and decision aiding. The Army TRADOC (Training and Doctrine Command) System Manager for Cannons (TSM Cannon) has asked D&SA Battle Lab and the Army Research Laboratory (ARL) Field Element at Fort Sill to support the evaluation of this emerging technology through support of a Concept Evaluation Plan (CEP). The evaluations will consist of a series of CEPs in which Crusader's characteristics will be evaluated using field artillery units (with their field command and control equipment) and the D&SABL's Synthetic Theater of War (STOW) environment. The first of the CEPs was conducted in 1996, and the second in July of 1997. The third CEP is being planned and will be conducted in September of 1998.

Both subjective and objective data are captured during experimentation to refine Crusader system tactics, techniques, and procedures and to update the operational concept document. . Subjective data are gathered through discussions and notes from the after action reviews (AARs) conducted at the end of each battle, through guided discussion groups which focus on specific problem areas (e.g. resupply), and through questionnaires. Suggestions from the soldiers or other subject matter experts are frequently translated into experimental objectives for the next day's battle. Objective time and error data are captured to examine information processing timelines and battle outcomes.

CEPs 1 and 2 are complete. The CEP 1 report has been published and the CEP 2 report is in preparation and will be published in the spring of FY98. CEP 3 formal testing begins 1 September at Fort Hood TX. Point of Contact: Dr. Linda Pierce, D&SA BL/ARL, DSN 639-5051 pierce@arl.mil

#### **CEP 0608 InfoScope.**

This project is being conducted to investigate the effectiveness of a new technology for training forward observers. The INFOSCOPE™ is a canteen-sized computer worn by the user including a non-interfering attachment to field optical systems. It can be

used with binoculars, missile launch sights, Abrams/Bradley systems sights, as well as other systems. The INFOSCOPE™ receives data by wireless communications and graphically injects entities generated by simulations into the viewer's visual field. It also enhances views with icons and text describing simulated entities. The user can "see" threat elements and conduct reconnaissance displayed over actual terrain. It was designed to permit playing deep or rear threats where none are played now; to overcome maneuver constraints near environmentally protected areas; to permit realistic opposing force portrayal for light forces and special operations recon elements; to provide realism for leaders and recon elements at all levels; and to permit recon operations by light and special operations elements. POC Dr. Linda Pierce, D&SA BL/ARL, DSN 639-5051 pierce@arl.mil

#### **CEP 0609 Fire Support at the National Training Center.**

The D&SA Battle Lab has proposed a method of Battle Damage Assessment (BDA) that addresses many of the deficiencies of SAWE/MILES II. The D&SA BL will build on TECOM software and techniques from distributed interactive simulation (DIS) to access information in the Central Instrumentation System (CIS) at NTC. This information will be used to create a mirror image of the real world locations of tactical vehicles in the synthetic environment. The high resolution synthetic environment will contain artillery projectile flyout and delivery models that provide accurate replication of artillery effects on this synthetic battlefield, to include suppressive effects. High resolution BDA models will use the distribution of artillery effects and the locations of the live vehicles to calculate predicted damage and suppression to the live vehicles. This information will be fed back into the CIS for transmission to the actual vehicles. In addition, a DIS compliant counter-fire radar simulation will be interfaced to the collective training system radar controller so that Q36, counter-fire radars can be simulated in the synthetic environment.

D&SA BL plans to install software and hardware at the NTC to prove this concept and to collect data on a non-interference basis to compare BDA produced by SAWE/MILES II to DIS BDA. Once the proof of concept is completed, the Army Research Lab (ARL) Fort Sill Field Element will run an experiment to determine the impact of these simulation enhancements on training at the NTC.

This concept has been briefed to BGs Wallace and Cash and they have concurred with our plans. The D&SA Battle Lab will provide all required software and hardware and collect and evaluate performance

data. If the enhancements are accepted by the NTC, the equipment and software will be left behind permanently. Software support for the systems will also be provided for the next two months until the NTC support contractors learn how to use the systems. POC Mr. Bill Millspaugh, D&SA BL, DSN 639-3649, millspaugh@sill-battlelab.army.mil

#### **CEP 0611 Special Operation Forces.**

The SOF Digital Fire Support Connectivity CEP will determine Army Fire Support digital connectivity between the Special Forces Operational Detachment Alpha (SFODA) and the SOF C2 architecture with currently fielded SOF communications packages. Digital connectivity between fire support and SOF will dramatically shorten sensor-to-shooter timelines and remove man-in-the loop processing. Currently, deployed SOF teams cannot send digital calls-for-fire through SOF communications to the conventional fire support architecture.

This CEP will conduct hardware/software evaluations and demonstrations of each link in the SOF targeting chain from SFODA to the Special Operations Command and Control Element/ Forward Operations Base in a laboratory environment. The objective targeting architecture will be tested in a Joint Field Training Exercise using time-sensitive-targeting to evaluate SFODA's digital targeting potential to conventional commanders.

SOF teams' ability to provide real time target acquisition, accurate real time BDA, perform as a "thinking" targeting sensor, and execute TMD attack operations against short dwell targets is hindered by the lack of a digital linkage between SOF and fire support.

#### **Future Operational Capabilities:**

a. To have continuous, pro-active, real time ground based target acquisition and to disseminate targeting information throughout the force with an integrated communications network resulting in a seamless targetable information system

b. To give commanders the direct ability to command and control fires (sensor-to-shooter linkages) to effectively extend his battle space, prevent fratricide and conserve resources.

#### **Composition Of Project Team:**

The CEP will be executed by Depth and Simultaneous Attack Battle or United States Army Special Operation Center. POC MAJ Cook D&SABL, DSN 639-372, cookd2@doimex1.sill.army.mil

#### **CEP 0620 Classroom XXI – Automation and Simulation in the Classroom:**

The purpose of the project is to support the successful

integration of automation and simulation into the USAFAS Officer Advance Course (OAC) by evaluating current classroom capability in relationship to classroom requirements, instructional design and learning theory, and advances in instructional media. Evaluation includes an understanding of current FA performance and lessons learned and projected requirements for FORCE XXI. The goal is to provide decision support to make the best investment of resources in training aids and simulations to produce the most efficient and effective training possible in the USAFAS OAC.

Based on our review, the Battlefield Relevant Instructional Design Guidance Environment (BRIDGE) was established. The BRIDGE is an experimental interactive courseware design environment for instructors, students, and researchers to collaborate on the development of classroom applications. Proof of principle interactive courseware is being developed to demonstrate the application of instructional theory and the use of advanced technology in the OAC classroom. The courseware, Advanced Understanding of Military Environments (ACUMEN), will exploit classroom simulation technology and demonstrate cutting edge instructional theory designed to enhance learning effectiveness and training transfer.

ACUMEN proof of principle courseware will be available in March 1998. A report documenting the development and evaluation of both the BRIDGE and ACUMEN will be available June 98. POC Dr. Linda Pierce, D&SA BL/ARL, DSN 639-5051 pierce.arl.mil

#### **CEP 0635 Voice Recognition:**

To assess the feasibility of using speech recognition, activation and synthesis to speech enable existing tactical Forward Observer System (FOS) and light unit field artillery systems. This evaluation will provide a basis for providing information for decision to incorporate speech technology for a natural soldier-machine hands-free interface in the FOS and AFATDS systems. POC CPT Oakes, DCD, DSN 639-6838/6839 OakesD@sillcmd-smtp.army.mil

#### **ACT II Silent Eyes Imaging Artillery Projectile:**

Silent Eyes will provide real-time Battle Damage Assessment. Hughes Missile Systems Company is developing this imaging artillery projectile. This projectile contains an expendable imaging sensor for data collection and a data link for image transmission to a ground station. The projectile is launched from a standard 155-mm howitzer using a smokeless rocket booster and then flies along a typical ballistic trajectory to its intended search area. Navigation accuracy is better than 30 meters at all ranges. The rocket provides a boost to a predetermined point, at which time it glides to a preset GPS location. As this device descends in circular flight over the target

area, it will transmit color television imagery and GPS coordinates to a ground station. The imagery will be recorded on the ground.

The Demonstrations will include launch from a 155 mm howitzer, rocket boost, flyout/glide to the test target, performance of a 2 to 4 minute search of the desired target location and relay of compressed video imagery at 2 second intervals to a ground station located at or near the firing location. POC Randal J. Shorr, D&SA BL, DSN 639-2936, shorr@doimex1.sill.army.mil

#### **ACT II Acoustic Targeting Sensor Augmentation for Fire Support.**

The purpose of this project is to demonstrate an existing small-arms, acoustic detection system is modified to provide line-of-bearing azimuth to firing artillery weapons. The system consists of remote acoustic sensor units, communications/processing unit and base station/display. The system will be demonstrated during artillery live fire exercises at Ft. Sill, Oklahoma.

This artillery location system-“Tactical Asset for Gunfire Identification and Targeting-Counter Fire” (TAGIT-CF), addresses the need to enhance the Army’s ANTPQ-37, Fire Finder Radar with a passive, non-emitting cuer; primarily for providing azimuth information for hostile artillery fire. POC Pat McCartney, D&SA BL, DSN 639-2937, mccartneyp@doimex1.sill.army.mil

#### **Other D&SA BL Experiments:**

##### **Battlefield Coordination Detachment (BCD) Initiative:**

On 1 Nov 1995, the Chiefs of Staff of the Army and Air Force signed a Memorandum of Agreement reinforcing the liaison support relationships between the two services. To this end, the CSA directed the US Army Field Artillery School (USAFAS), proponent of the BCD, to further develop BCD capabilities across the DTLOMS (Doctrine, Training, Leader Development, Organization, Material, and Soldier issues).

The D&SABL was given the lead as the horizontal integrator of all DTLOMS issues, as well as the developer of FM 100-13-1, Tactics, Techniques and Procedures (TTP) for the Digitized Battlefield Coordination Detachment. The endstate of the initiative is to provide all four BCD’s (1st BCD, Ft Bragg; 2nd BCD, USAR; EUSA BCD, and USAEUR BCD) the tools (equipment, personnel, training) to facilitate a seamless interface between the Army Force (ARFOR) Commander and the Joint Force Air Component Commander.

#### **TTP Development:**

D&SABL received the 1st BCD’s automation devices on 3 Jun 96 and established a testbed at Fort Sill to experiment with connectivity, software, and TTP development. 1st BCD trained at the testbed 8 - 19 Jul 96, prior to deploying to Shaw AFB for Joint Warfighting Integration Demonstration (JWID) 1996. During JWID 96, the interface between AFATDS and CTAPS, as well as other automation capabilities developed to date were exercised. After JWID 96, 1st BCD retained their automation equipment. TTP development continued during Blue Flags (Sep 96, Feb 97), Unified Endeavor (Dec 96), Joint Task Force Exercise (Mar 97), and culminated at Roving Sands 97. A TTP working draft was established and sent to the field for final comments. Once updated, the TTP was finalized and has been sent to the army Training Support Center for final publication. The estimated date for distribution is June 98.

#### **BCD Fielding:**

Two BCDs have received their ABCS equipment and have undergone integrated new equipment training. The BCD in Osan, Korea was fielded from 9 September 97 to 17 October 1997. The USAREUR BCD was fielded in Ramstein, Germany from 3 November 97 to 12 December 97. Each BCD was fielded with: 3 AFATDS (Advanced Field Artillery Tactical Data System); 2 ASAS-RWS (All Source Analysis System – Remote Workstation); 2 GCCS-A (Global Command and Control System – Army); 2 MCS (Maneuver Control System); and 1 AMDWS (Air and Missile Defense Workstation). The Korea fielding was different in that additional AFATDS were fielded, along with the BCD; to allow units in Korea to nominate targets to the Air Force using AFATDS. These units were provided the number of AFATDS systems indicated: CP TANGO (Theater Air Naval Ground Operations) (1); GCC DOCC (Ground Component Command Deep Operations Coordination Center) (3); First ROK Army (1); Second ROK Army (1), Third ROK Army (1), Second Infantry Division (3), and 6 Combat Aviation Brigade.

#### **Other DTLOMS Issues:**

As the horizontal integrator, the D&SABL worked a number of issues across the DTLOMS spectrum. Force Development introduced a 39-man MTOE change based upon the doctrinal requirements of FM 100-13. This Force Development Update (FDU) has been staffed to the field for final comments and the FDU is now being staffed through TRADOC for final approval. D&SABL initiated an Battlestaff Training School (BTS) Integrated Training program to provide BCD-assigned personnel a 1-stop training base and promote C4I integration opportunities USAF emerg-

ing systems. D&SABL and PM FATDS developed the integrated New Equipment Training (NET) programs in preparation for BCD fielding through two integration efforts conducted at D&SABL in June and August 97. D&SABL and PM FATDS hosted the BCD Conference at FT Sill 5-6 Feb 98 to address issues raised as the result of the recent BCD Fieldings and to formulate the road ahead. D&SABL has begun participating in the development of the Theater Battle Management Core Systems (TBMCS), the USAF Command and Control automation system, to facilitate joint interoperability between the Army's ABCS and the TBMCS software. The D&SABL provide the Army's representative to the Combined Test Force for TBMCS development. POC MAJ Tipton, D&SABL, DSN 639-3138, [tiptonf@doimex1.sill.army.mil](mailto:tiptonf@doimex1.sill.army.mil).

#### **Theater Missile Defense — ATTACK OPERATIONS:**

TRADOC Headquarters designated the Depth & Simultaneous Attack Battle Lab (D&SABL) as the proponent for the Attack Operations (AO) pillar of Theater Missile Defense (TMD). D&SABL is charged with developing the future operational capability (FOC), submitting DTLOMS requirements and the horizontal integration of TMD-AO efforts within TRADOC. As the TRADOC lead, D&SABL coordinates support and integrates the efforts of Aviation, Special Operations Forces, Military Intelligence, and Field Artillery with respect to AO during key TMD exercises and experiments.

#### **Project Summary:**

D&SABL integrated AO participation in the following TMD exercises:

#### **Theater Air and Missile Defense (TAMD)**

##### **Master Plan:**

D&SABL is participating with representatives from all four TAMD operational pillars to produce the Army's TAMD Master Plan (ATMP). The ATMP is intended to establish a coordinated approach to ARMY TAMD and articulate with "one voice" the Army's role in Joint TAMD. Due to the complexity and magnitude of this effort, the ATMP will be developed in three stages. The first edition will provide details through 2003; the second will focus in detail through 2010, and the final edition will update previous editions, and provide conceptual details beyond 2010. The initial effort will produce the FY99 version of the plan that is scheduled for publication by December 1998 and is designed to influence the FY00 POM development. In its role as the TRADOC lead for AO, D&SABL will contribute the coordinated initial drafts of the attack operations portions of each of the ATMP editions. POC MAJ Cook D&SABL, DSN: 639-3728,

[cookd2@doimex1.sill.army.mil](mailto:cookd2@doimex1.sill.army.mil), Mr. Gary Lemons D&SABL, DSN: 639-3729, [lemonsg@doimex1.sill.army.mil](mailto:lemonsg@doimex1.sill.army.mil)

#### **Joint Project Optic Windmill (JPOW):**

JPOW is a Royal Netherlands Air Force (RNLAf) organized combined/joint theater missile defense exercise from 11-20 May 98 run in cooperation with USEUCOM, with support from BMDO and SMDC. The exercise will focus all aspects of combined/joint TMD providing the participants an opportunity to explore current capabilities within NATO and participating national forces (US, UK, GE, DE and NL). Exercise objectives are to refine NATO, US and national TTPs, BM/C4I and architecture for conducting the four pillars of TMD. D&SABL Battle Lab will participate in the exercise to demonstrate the Army's ability to conduct attack operations using Army ATACMS. Army participation is limited to a four-man AFATDS equipped cell replicating the functions of the BCE/DOCC with TAFSM acting as the interface model to inject ATACMS into the simulation environment. POC MAJ Cook D&SABL, DSN: 639-3728, [cookd2@doimex1.sill.army.mil](mailto:cookd2@doimex1.sill.army.mil), Mr. Gary Lemons D&SABL, DSN: 639-3729, [lemonsg@doimex1.sill.army.mil](mailto:lemonsg@doimex1.sill.army.mil)

#### **Theater Missile Defense Initiative (TMDI) — 99:**

As a result of the success in Coherent Defense 97, the Chairman of the Joint Chiefs of Staff (CJCS) tasked CINC USACOM to continue its efforts to identify and neutralize inter-service friction points relating to TAMD. TMDI 98 was a follow-on exercise from 29 Apr to 14 May 98 designed to examine issues related to the transition from expeditionary, through early entry and full buildup, to the offensive portions of a generic major land campaign. The exercise construct consists of three phases. Phase I, Derivation of Issues, identifies inter-service friction points relating to TAMD. Phase II, Issue Illumination and Neutralization of issues, is a series of 04/05, 06 and General Officer/Flag Officer (GO/FO) Seminars designed to identify common ground and planning considerations that resolve the Services' operational and doctrinal differences. Phase III, is the actual exercise overlaid on a pre-planned Tier II level exercise. TMDI 98 was canceled due to operational contingencies and planning is underway to identify replacement exercises in FY 98 to fill the void. CINC USACOM has further directed that Phase II be repeated to clarify additional friction points brought up during the Jan 98 GO/FO Seminar. POC MAJ Cook D&SABL, DSN: 639-3728, [cookd2@doimex1.sill.army.mil](mailto:cookd2@doimex1.sill.army.mil), Mr. Gary Lemons D&SABL, DSN: 639-3729, [lemonsg@doimex1.sill.army.mil](mailto:lemonsg@doimex1.sill.army.mil)

### **Joint Warfighters Joint Test & Evaluation:**

D&SA Battle Lab is the operational mentor for Joint Warfighters (JWF) Joint Test and Evaluation (JT&E). The purpose of the JT&E is to improve the prosecution of time-sensitive surface targets (TSST) in the joint battlespace. During wartime and in training exercises, joint task force commanders have had trouble prosecuting TSSTs in an effective and efficient manner when employing joint firepower. The key issue is timeliness; i.e., the difficulty of immediately prosecuting surface targets, including those that are on attack plans such as the Joint Forces Air Component Commander's (JFACC) Air Tasking Order (ATO) or the Joint Forces Land Component Commander's (JFLCC) Attack Guidance Matrix (AGM). This program evaluates concepts and addresses needs and issues that occur in joint military operations. The JT&E program consists of three phases: (1) the nominations process, (2) the joint feasibility studies to determine whether nominated studies are needed and feasible, and (3) the actual test evaluation. POC MAJ Cook D&SABL, DSN: 639-3728, cookd2@doimex1.sill.army.mil, Mr. Gary Lemons D&SABL, DSN: 639-3729, lemonsg@doimex1.sill.army.mil

### **Joint Combined Arms Precision Attack (JCAPA).**

JCAPA is a three-year; three phased Battle Lab Warfighting Experiment (BLWE) co-hosted by the Air Maneuver Battle Lab (AMBL), D&SA BL and the Space and Missile Defense Battle Lab (SMD BL). It is designed to examine the integration of army aviation, precision fires, and space based sensors, C2 platforms and weapon systems to identify, track and neutralize key enemy targets at extended ranges. The BLWE participants will develop experimental concepts and TTPs using current (Phase I), 2010 (Phase II) and 2020 (Phase III) technologies. Tested in a simulated environment using a mix of future technologies, and various force structure designs, the BLWE will recommend to TRADOC and the AAN Project DTLOMS changes that have the potential to enhance our lethality, survivability and OPTEMPO. POC MAJ Solley D&SABL, DSN: 639-3036, solleyd@doimex1.sill.army.mil, Mr. Gary Lemons D&SABL, DSN: 639-3729, lemonsg@doimex1.sill.army.mil

### **Theater Precision Strike Operations ACTD:**

This Army led joint program responds to CINCUNC with a significantly improved capability to plan and direct theater precision engagement operations and fires through near-real-time synchronization of U.S. and coalition assets from the Forward Line Own Troops to the Forward Boundary.

TPSO will examine concepts and technologies applicable to operational and tactical, joint and combined

warfighting requirements. The Joint Forces Land Component Commander (JFLCC) needs an enhanced capability to conduct theater fires and precision engagements through a joint end-to-end solution including: rapid targeting, shared situational awareness, enhanced command and control decision making, and responsive weapons delivery. The ACTD objective is to provide the JFLCC the capability to forecast, plan, and execute precision engagements and fires within his AO, while more fully integrating the Republic of Korea (ROK) forces and other components. This ACTD will integrate joint mature technologies with legacy systems to provide dynamic targeting made possible through enhanced sensors, weapons systems platforms and C4I. It will exercise and evaluate their performance on a synthetic battlefield that incorporates live, virtual and constructive simulations. Major exercises are planned for FY99, FY00 and FY01.

On November 21, 1997, the DoD approved the TPSO ACTD as a new start for FY 98. Currently, DoD and Army funding total are approximately \$94M. TPSO ACTD has started in FY 98 and will run for 6 years including 2 years of leave behind support. Other services are still determining the cost required for participation. POC MAJ Dave Solley or Mr. Mike Blose, D&SA BL, DSN 639-3036/3038, solleyd@doimex1.sill.army.mil or blosem@doimex1.sill.army.mil

### **Joint Surveillance Target Attack Radar System (JSTARS):**

The JSTARS is a Joint Army/ Air Force surveillance, Targeting and Battle Management System designed to support air/ land component commanders with near-real-time wide area surveillance and enhance theater battlefield management. Coordination continues between INSCOM, Fort Sill and Fort Rucker to monitor the Headquarters and Flight Crew TOEs resourcing issues.

The E-8C JSTARS, is a modified Boeing 707-300 aircraft. With an in-flight refueling system, the E-8C's normal 11-hour range can extend to 20 hours or more. The system's advanced radar, computer, and communications technologies combine to create a powerful surveillance, targeting, and battle management system. Improvements include AFATDS and ASAS communications capability, which potentially decreases the sensor to shooter timeline.

The JSTARS is a long-range, air-to-ground surveillance system designed to locate, classify, and track ground targets in all weather conditions. While flying in friendly airspace, the JSTARS can look deep behind hostile borders to detect and track ground movements in both forward and rear areas. The radar has a range of more than 200 km. These

capabilities make Joint STARS effective for dealing with any contingency, whether actual or impending military aggression, international treaty verification, or border violations.

Wide Area Surveillance (WAS) and Moving Target Indicator (MTI) are the radar's fundamental operating modes which are designed to detect, locate, and identify slow-moving targets. The MTI data will be viewed in every TOC from EAC down to the maneuver brigade. The Land Component Commander (LCC) will detect the enemy and select the point on the battle field on which to deliver destructive fires. JSTARS support of the Deep Attack will synchronize joint warfighting as for deep Apache attacks and deep air assault operations. JSTARS provides data required for Artillery systems to successfully "hit the moving target" by providing target speed, and precise arrival time at the engagement point in addition to target location CEP well within required Artillery standards. JSTARS can see over the hills in front of your TACPs and assist in employing CAS by providing accurate location of the highest concentration of threat vehicles.

The BCD is a critical node for JSTARS: It is important for the BCD to provide as much information to JSTARS in advance so we may create mission files, such as requesting and receiving Defense Mapping Agency files. Milestones: Common Ground Station (CGS) ITO&E held during March 1998 at Fort Huachuca, AZ. POC MAJ Gary Illi, DSN: 639-4229; illig@doimex1.sill.army.mil

## **Dismounted Battle Space Battle Lab:**

The Dismounted Battlespace Battle Lab (DBBL) at Ft. Benning, Ga. continues to address many key initiatives and issues affecting the Army of the Future. The three Advanced Concepts and Technology Demonstrations (ACTD) are:

### **Rapid Force Projection Initiative:**

(RFPI) ACTD: This experiment is designed to evaluate lethality, survivability, and situation awareness for light forces in an early entry scenario before the arrival of heavy (follow-on) forces, will be executed in July 1998 at Ft Benning, Ga. with 2d Brigade, 101st Abn (ASSLT). 3-7 Cav from 3ID (M) will provide the OPFOR. Equipment delivery to both XVIII Airborne Corps and 101st takes place NLT 2 Feb 98. The Enhanced Fiber Optic Guided Missile Company at XVIII Corps is already undergoing training. New equipment training for all units participating in the demonstration begins in January 1998. Deliverables from this experiment to the XVIII Corps include: EFOG-M, HIMARS, Automated 155 Fire Control, a prototype brigade light digital TOC,

Hunter Sensor Suite, Remote Sentry, and both hand emplaced and air dropped acoustic sensors.

### **MOUT:**

Advanced Concepts and Technology Demonstration: The McKenna MOUT Site initial experiments begin in February 1998 and focus on technology insertions at the squad level for urban combat. MOUT experiments will be held quarterly leading to a company test in 1999 and a capstone exercise at battalion level in '00. To date, eight experiments are scheduled for Ft. Benning's McKenna MOUT site, while four will take place at Camp Lejeune, North Carolina. Both sites will be fully instrumented. XVIII Airborne Corps will provide troop support for all experiments. In addition to technology inserts, both training and doctrinal literature is being reviewed and updated as part of the MOUT experiment.

### **Line of Sight Anti-Tank:**

(LOSAT) ACTD: LOSAT received final approval as an FY'98 ACTD new start the week of 17 November 97. As a result of this ACTD, a LOSAT Company will activate in XVIII Corps. Plans currently call for the delivery of 13 fire units and 144 missiles to the company. The LOSAT ACTD will stretch over the next 4-5 years; however any additional funding can shorten that timeline. LOSAT has the requirement to be both airdropped from a C-130 or slingloaded under a UH-60L. XVIII Airborne Corps will conduct this experiment with the Infantry School. Remaining projects are:

### **CEPs 1997**

Light Digital Tactical Operations Center Simulator Phase I, II, & III

Multipurpose Mission Platform (MMP)

Warfighter Physiologic Monitoring

Image Transmissions

Counterdrug (Virtual Reality-Marijuana Eradication Spotter Program)

Dismounted Combat Identification Phase IV

5.56mm Controlled Penetration Ammunition

Soldier Power (Rechargeable Batteries)

Lightweight Minefield Obstacle Breacher (LMOB)

Countersniper

Military Operations on Urbanized Terrain (MOUT)

Aided Night Fire Training Standards

Non-Lethal Weapons (NLW)

### **CEPs 1998**

Data Display Integration Technology Evaluation

Small, Hands Free, Squad Radio

Three Dimensional Night Vision Goggles (3D NVGs)

Dismounted Combat Identification Phase V

#### **ACT IIs 1997**

Advanced Membrane Transducer (AMT) Antenna

Under Barrel Tactical Paint Ball System

Mini Remote Weather Station (MWRS)

#### **ACT IIs 1998**

3 Dimensional Night Vision Goggles (3D NVG)

Technical Demonstration of a Combat Laser Identify Friend or Foe (IFF) to Support the Dismounted Soldier in Close Air Support

(CAS) and Military Operations on Urbanized Terrain (MOUT) Roles (Combat Identification Close Air Support CIDCAS)

Building Feature and Content Prediction Using Knowledge-Based Sensor Fusion

#### **SIMULATIONS:**

Military Police Weapons Mix Study

Joint Program Office Unmanned Ground Vehicle Study

Directorate Combat Developments USAIC Mortar Study

Anti-Personnel Land Mine Study Lawrence Livermore National

Laboratory

Directorate Combat Developments USAIC Division Redesign Study

World Artillery and Mortar Systems

World Infantry and Tank Systems

Dismounted Warrior Network Squad Synthetic Environment

Urban Synthetic Environments - MOUT Neighborhoods

WARFIGHTERS SIMULATION 2000 (WARSIM 2000)

Dismounted Warrior Network (DWN)

Army Experiment IV

HRS-65 Deliberate MOUT Attack by Light Infantry Brigade & Mech Infantry Battalion Task Force (NEA)

#### **OTHER PROGRAMS/ BIEs**

National Reconnaissance Office Digital Terrain Survey

Unmanned Aerial Vehicles (UAV)

Advanced Fire Support System (AFSS)

Contingency Force AWE

Force XXI Land Warrior FXXI-LW

Night Fighting Experimentation Facility (NFEF)

Improved Hand Grenade Fuse

Fused Image Sensor

Platoon Early Warning Device II (PEWD II) Boresight Retention for Rifles and Carbines

POC: Mr. Dick Caravana, DBBL, DSN 835-5167, caravanr@benning-emh-2.army.mil

## **Mounted Maneuver Battle Lab:**

The Director of the MMBL is the Commanding General of the United States Army Armor Center and Fort Knox, MG George H. Harmeyer. The Chief of the MMBL is COL Karl J. Gunzelman and the Deputy Chief is Mr. David Estes.

The MMBL is divided into two divisions: the Experimentation Division, and the Simulation Division. Both divisions are responsible for the planning and execution of Concept Experimentation Programs (CEP), Advanced Concept and Technology II (ACT II) programs, Small Business Innovative Research (SBIR), and other experiments as requested by various customers of the mounted maneuver battlespace. The Experimentation Division is primarily responsible for the execution of live experiments (soldiers in the loop with the actual hardware/software, or using new tactics, techniques and procedures (TTP), etc.). The Simulation Division, consisting of the Mounted Warfare Test Bed (MWTB) and the TRADOC Brigade and Below Virtual Battlefield (TB2VB), is primarily responsible for classified and unclassified experimentation, testing and training using constructive, virtual and combined synthetic environment simulations. In many cases, the two divisions work in combination to maximize areas of expertise and manpower.

### **Current Projects (FY 98):**

The MMBL is currently in the planning and execution phases of the following Battle Lab Experiments (BLEs). Experimentation Division is currently involved with the following CEP and ACT II program:

#### **CEP #1701, Battle Command Reengineering, Phase II:**

The purpose of the Battle Command Reengineering Experiment is to leverage insights gained from phase I of this experiment conducted at Ft Knox in Dec 97, to further examine advanced digitization's effects on Army After Next (AAN) Battle Command at Brigade and Below.

#### **CEP # 1702, Next Generation Semi-Autonomous Reconnaissance Operations on the Digital Battlefield:**

The purpose of the Task Force Tactical Operations Center (TOC) Reengineering Experiment leverage

insights gained from phase I of this experiment conducted at Ft Knox in Dec 97, to further examine advanced digitization's effects on Battle Command at Brigade and Below. This CEP is a continuation of Models and Simulation (M&S) efforts supporting the development and application of Next Generation Unmanned Vehicle (NGUV) technology to the Maneuver Battlespace and the Manned and Unmanned Aerial Platform Operations On The Digital Battlefield CEP being conducted at the AMBL.

#### **CEP # 1703, Distributed Interactive Fire Mission (DIFM):**

The purpose of this CEP is the implementation and test of a Distributed Interactive Fire Mission (DIFM) tank Fire Control System configuration that will support the operation of the M1A2 System Enhancement Program (SEP) variant in the tactical battlefield environment. This is a planned, small to moderate scope software development exercise and test to simulate the operation of the DIFM Multi-Agent Fire Control System concept during battle, as implemented in a sensible configuration for M1A2 Abrams which is driven by the performance parameters of current equipment and near term technology developments.

#### **CEP # 1704, Mounted Warrior Capability Assessment:**

To refine the materiel requirements for Mounted Warrior through evaluation a series of prototype Mounted Warrior Systems which are based on leveraged items from Land Warrior, Air Warrior, discreet item/material developments throughout the services, the best available commercial technology, and Mounted Warrior specific prototype components.

#### **CEP #1705, FSCS Sensor Suite Configuration Experiment:**

This experiment will pave the way for determining and refining operational requirements for the Future Scout and Cavalry System.

#### **CEP # 1706, Future Combat System Constructive Experiment:**

To determine the optimum performance and number of Future Combat Systems (FCS) and Future Scout and Cavalry Systems (FSCS) in a combat organization in the Force XXI and the Army After Next (AAN), and the organizations optimal configuration.

#### **CEP # 1758, Virtual Terrain Imagery:**

The purpose of this concept evaluation program (CEP) is to evaluate the effect of providing the level of terrain detail of virtual simulation to the tactical commander and staff during JANUS constructive simulation training exercises. Despite the current option in JANUS of portraying profile arrays along

selected terrain azimuths in a superimposed window, staff training with such resources provides no direct view of the battlefield from selected viewing points (vehicles). This denies appropriate staff officers terrain-use details potentially beneficial to the operations plan and limits investigation of tactical decision logic to local strategic concerns exclusive of a capacity to address immediate tactical problem-resolution. Through linkage of constructive schematic displays and virtual tactical arrays in a mission execution context, a resource is suggested for detailed analysis and training of user situation assessment skills.

#### **ACT II MTD-040, Brigade and Below C4ISR Head-Mounted Workstation Display System:**

To provide expanded, more efficient, and increased capabilities with increased user friendliness to brigade and below C4ISR systems, sensors, and technologies. To demonstrate in two or more simulation realms (live, virtual, or constructive) of Distributed Interactive Simulation (DIS) the value of new capabilities to the warfighter. To ensure new capabilities, are user friendly, applicable to advanced and current Army Battle Command Systems (ABCS) and platform based digital command and control systems, and provide an increased probability of more efficient, timely, accurate information gathering, dissemination, and processing in support of decision making.

#### **ACT II MTD-009, Virtual Prototype Reconfigurable Future Scout and Cavalry System (FSCS):**

The Virtual Prototype Reconfigurable (VRP) FSCS program will result in the development and delivery of a reconfigurable virtual FSCS simulator. The MMBL will use the VRP FSCS to refine FSCS requirements, evaluate the warfighting contributions of candidate technologies and systems, determine optimum crew compartment configuration and task loading, assist in focusing industry on high payoff technologies, and serve a key role in the FSCS program. The VRP FSCS will simulate scout systems (with a crew of two or three) interaction in a virtual battlefield environment, and will be able to be used in small and large scale simulations as it is fully Distributed Interactive Simulation (DIS) compliant. This will enable this platform to participate in SIMNET and CCTT exercises, or as a standalone with MODSAF. A VRP construction module, hosted on a PC will allow the user to modify VRP FSCS physical and performance parameters.

#### **Experimental Unmanned Vehicle Demonstration III (XUV):**

Project is a customer type experiment to support the Office of the Secretary of Defense, Research, Development and Engineering Directorate, Land Warfare



Division experimentation with ground Robotics and unmanned platforms. Purpose is to provide live, virtual and constructive experimentation support to the program developers and program managers within the designated mission role of Reconnaissance, Surveillance, and Target Acquisition (RSTA) in a brigade and below maneuver environment. This is a technology base effort focused on maturing sensor, command, man-machine interface, and related issues.

**Total REI-CALL (REtrieve Information from the Center for Army Lessons Learned):**

The Total REI-CALL program is a long-term conceptual program leveraging on-going experimentation/initiatives and emerging technologies to capture experience and disseminate empirical information in an intuitive, visual format. The MMBL, in cooperation with CALL, will provide the future force an on-line information retrieval tool to aid in situation analysis and decision making. Data will be collected, cataloged, indexed and retrievable as information through the CALL database. This information will be on-line and readily accessible to the tactical user via interactive search and through software tools designed to adapt information to given situations or customized parameters (cognitive assistance). Information will then be displayed in real-time, 3D selectable terrain within the context of a given situation.

**Past Projects:**

**CEP # 1701, Voice Digitization for Wireless Interface to Appliqué:**

The purpose is to evaluate the potential improvement in timeliness, accuracy, and expanded operational capability for information gathering, formatting, and system interfacing using the advanced communication concepts of Wireless Voice Intercoms, Voice Command Recognition, Voice Digitization, Speech Intelligibility Enhancements, and Appliqué Interfacing for report logging and distribution.

**CEP #1759, Battalion TOC Restructure, Phase I:**

The purpose of this experiment is to examine the impact on the Task Force Commander, Staff and Military Decision making Process when information is presented in accordance with the requirements of the Force XXI Battle Command Brigade and Below (FBCB2) system.

Specifically, the experiment will focus on the configuration and functionality of the TOC, and the tools necessary for the commander to make military decisions.

**CEP # 1760, Force XXI AR/Mech BN Redesign (TERM):**

The purpose of this experiment is to evaluate in constructive simulation (Battlefield Environment Weapon System Simulation, BEWSS) the operational effectiveness of alternative TOE organizations employing Force XXI assets and Tank Extended Range Munitions (TERM), gain insights on an optimal tank and scout mix with enhanced Command and Control architectures, and projected Tactics, Techniques and Procedures (TTPs) for the future ground maneuver force.

**CEP # 622, Air Ground Command Post:**

To perform digital connectivity between the Army Airborne Command and Control System (A2C2S) and the BCV. The primary means of digital connectivity will occur through the L-Band radio. The experiment will demonstrate advanced digital communications technologies required for Army aviation and Army ground maneuver forces to digitally pass information.

**CEP # 611, Scout Laser Communications:**

The purpose is to examine the tactical capabilities and combat value of upgrading combat binoculars with a laser rangefinder, azimuthal heading sensor, a camera focal plane with digitized image recording, multiple image storage, and a radio silent communications (lasercom) for voice and image transmissions. This technology can provide an accurate means of determining target position relative to the observer's GPS position. These upgraded binoculars can act as a forward sensor linked to weapon target acquisition sensors.

**CEP # 614, Laser Radar Targeting System (LATARS) Appliqué Evaluation:**

The purpose of this CEP is to evaluate LATARS contribution to the performance and effectiveness of the digital distribution of LATARS sensor data to the All Source Analysis System (ASAS) in the BCV. LATARS will provide the user with a real time display of 3-D imagery along with target identification, range, and location over SINCGARS to ASAS. For the evaluation, a Laser Radar and Automatic Target Recognition processor will be integrated with MIA2 systems to create an appliqué LATARS which will be used to acquire and identify targets on a maneuver range out to 3000 meters.

**CEP # 619, Force Protection Experiment III (FPE III):**

The purpose of this CEP is to evaluate the effect of combining vehicle survivability, combat identification, and digital communication systems on ground combat vehicles operating as part of a battalion level Combined Arms Task Force.

### **ACT II MTD-015, INTELCOM plus Wireless Headset:**

To demonstrate and validate the uses of wireless communications using mounted and dismounted soldiers under battlefield and garrison type conditions. It will further allow early evaluation of a product that may revolutionize the level of intelligible wireless communications in high noise areas.

### **ACT II MTD-110, Automated Target Acquisition and Identification:**

The purpose of this ACT II is to provide automated target detection and positive friend identification through the use of the Battlefield Combat Identification System (BCIS) which is integrated with the MTI Ground Radar (MGR). To provide interrogating capability with BCIS under the control of radar, where targets detected by radar will be automatically interrogated by the BCIS and a combined MGR/BCIS report will be generated with each detection.

### **ACT II, MTD-062, Semiconductor Laser Directional Infrared Countermeasure Device:**

The purpose of this experiment is to demonstrate to capability of an advanced all semiconductor Laser Directional Infrared Countermeasure (SCL DIRCM) technique for defeating Top Attack and Anti-Tank Guided Missile (ATGM) threats.

### **Battlefield Interoperability Program (BIP):**

The purpose of the BIP is to validate, in a field environment, the ability to exchange digital data between Germany, Britain, France, and the US Bn/Regt TOC C2 systems, and to evaluate the technical objectives in an operational environment. A field experiment, Concordia 1997, conducted during October and November 1997 in Germany, tested three digital configurations. Initial data analysis, looking at various aspects of the experiment, suggests that the experiment was successful. A final report on experiment outcomes will be approved in April, 1998. Plans for Phase II are being formulated at the present time and will build on the Phase I results.

## **Maneuver Support Battle Lab:**

The Maneuver Support Battlefield Laboratory was officially organized at Fort Leonard Wood, Missouri on 1 October 1996. MG Robert Flowers, Commanding General of Fort Leonard Wood, serves as the Battle Lab Director. COL Don Riley serves as the Deputy Director for day-to-day operations. The Commandants of the Army's Chemical, Engineer, and Military Police Schools form the Maneuver Support Battle Lab's Board of Directors.

The Maneuver Support Battle Lab (MSBL) provides

overall direction, oversight, analysis and horizontal integration of experimentation actions related to Maneuver Support. A current definition describes Maneuver Support as those actions taken to protect the force from the effects of enemy/adversary action, and to provide the force freedom of movement during military operations as well as those actions to inhibit the enemy/adversary's ability to move. Usage of the term "Maneuver Support" is currently being analyzed by personnel from the Engineer, Chemical, and Military Police Schools.

### **Experimentation-Advanced Concepts Technology (ACT) II:**

The MSBL submitted four FY 98 ACT II proposals for Broad Area Announcement. They included Automatic Terrain Feature Extraction, NBC Battle Command System, Advanced Tactical Security Systems and Barriers, and Raptor (Intelligent Minefield) Robotic Employment System. Three of the four proposals have been funded for FY98: Automatic Terrain Feature Extraction proposal by Northrup Grumman, the NBC Battle Command System proposal by Optimetrics, and the Raptor Robotic Employment System proposal by Textron.

### **Advanced Technology Demonstrations (ATD):**

MSBL is sponsoring the Integrated Biological Detection ATD in conjunction with the US Army Edgewood Research, Development, and Engineering Center (ERDEC). The ATD started in 1996 and will culminate with a Battle Lab Warfighting Experiment (BLWE) in 1998-1999. The ATD will demonstrate two technologies: a remotely deployed Biological Aerosol Warning System (BAWS) using laser-diode and micro-ultraviolet laser-based particle counting technologies, and a point biosensor capability that will incorporate an Automated DNA Diagnostic (ADD) device. Background testing is being conducted at various locations around CONUS. The MSBL is also monitoring the "911" Bio ATD being conducted by the US Marine Corps. The Intelligent Minefield ATD is also being worked by MSBL as part of Raptor experimentation efforts.

### **Advanced Concepts Technology Demonstrations (ACTD):**

The MSBL is actively involved in several ACTDs including the Joint Countermine (JCM) ACTD, Rapid Force Projection Initiative (RFPI) ACTD, and the Military Operations in Urban Terrain (MOUT) ACTD, and is the TRADOC manager of the Rapid Terrain Visualization (RTV) ACTD. The Biological Defense (Ports and Airfields) ACTD is ongoing with Chemical School participation. The MSBL will be involved as necessary in the future in the proposed Joint Remote Biological Early Warning (JBREWS) ACTD and Non-Lethal Weapons Technical

Demonstrations. DEMO I of the JCM ACTD was completed in September 1997 with mixed results of several countermine systems. The JCM-ACTD DEMO II is ongoing. The RTV ACTD is having its first demonstration from 12-18 April at the Topographic Engineering Center (TEC), Fort Belvoir, Virginia. An EXEVAL with the 30th Topographic Engineer Battalion will be conducted later in FY 98.

#### **Battle Lab Warfighting Experiments:**

The MSBL has started work on two BLEs including the Biological Detection BLE (as part of the Biological Detection ATD) and the Chemical Protective Combat Uniform (CPCU) BLWE. The CPCU BLWE will be conducted at Fort Carson in May 1998 with soldiers from the 5th Engineer Battalion. The objective of the CPCU BLWE is to obtain wear data on prototype textiles. A baseline comparison will be conducted with the standard protective overgarment. Soldiers will perform common and collective tasks during field training exercises.

The MSBL has also started work on a Prototype Assessment Test (PAT) for Anti-Personnel Landmine Alternatives (APL-A). Three experiments will be conducted in FY 98-99 with two selected prototypes that meet the presidential guidelines to replace non-self destructing anti-personnel landmines. The concept of the APL-A PAT will be to determine the technologies that can be incorporated as alternatives to lethal/explosive anti-personnel landmines. The next generation APL must provide Army XXI forces with the same ability to disrupt, turn, fix and block the enemy.

#### **Concept Experimentation Program (CEP):**

The MSBL is actively engaged in the following FY 98 CEPs:

- Tele-Operation of the M1 Panther
- Tele-Operation of the D7G Bulldozer and M9 Armored Combat Earthmover (ACE) for Obstacle Clearing
- Maneuver Support C4I
- Range Estimation with Seismic Sensors for Early Detection
- Smart Bridge
- Mobile Hornet
- Non-lethal Alternatives for Anti-Personnel Land Mines (Multipurpose Sensor and Security Mission Platform)
- Bradley Engineer Platoon with Reconnaissance Team
- Pen Based law Enforcement
- Raptor Long Haul Communications (Combined with

similar CEP by Battle Command Battle Lab-Fort Gordon)

#### **US/German Battle Lab Cooperation:**

The MSBL hosted a bilateral US/German Maneuver Support Battle Lab workshop in early February 1998 to plan two upcoming Bilateral Battle Lab events. A Bilateral Countermine Workshop will be held in Germany during September 1998. A Maneuver Support Wargame Seminar to be held at Fort Leonard Wood in the 2nd Qtr FY 99. The Wargame Seminar will focus on Military Police, Engineer and Chemical reconnaissance doctrine, training, leader development, organizations, materiel, and soldier (DTLOMS) issues between both nations.

For further information please contact the Maneuver Support Battle Lab POC: Mr. Vern Lowrey (573) 563-4082, DSN 676-4082, Fax 4083. Email: lowreyv@wood.army.mil

## **Space and Missile Defense Battle Lab:**

The SMDBL stood up officially on 1 Oct 97. The SMDBL, which is part of the Space and Missile Defense Command, is a split-based operation headquartered out of Huntsville, with operations in both Huntsville, Alabama and Colorado Springs. Under a current MOA between TRADOC and SSDC, the SMDBL is intrinsically tied with all other TRADOC BLs ensuring effective Space and Missile Defense is horizontally integrated throughout all the Battle Labs. For more information on the SMDBL visit the Space and Missile Defense Command web site at <http://www.smdc.army.mil/SMDBL.HTML> (go to organization and click on Divisions within the BL).

#### **SMDBL Mission:**

Integrate Space and Missile Defense into Force XXI/AAN Joint and Combined Operations through the planning; execution, and analysis of warfighting experiments and technology demonstration in order to examine advanced concepts and technology which enhance the Commander's capability to fight and win on the 21st Century Battlefield.

#### **SMDBL Core Competencies:**

##### **Concepts and Initiatives.**

The Battle Lab identifies and examines candidate concepts, initiatives, and technologies for near-term infusion into Army space and missile defense programs or for experimentation on approved future operational capabilities. To focus military science and technology research, the SMDBL will also coordinate with Missile Defense and Space Technology Center

and other material development activities. Additionally, this area will provide forward-looking wargaming activities to the command, including participating in the Army After Next series of long-range Army wargames.

#### **Experiments, Exercises, and Training:**

The SMDBL coordinates, conducts, and participates in efforts focused on bringing space and missile defense capabilities to the warfighter, including support to joint and service Commander-in-Chief exercises, Advanced Warfighting Experiments, Army Experiments, and unit training activities. Products generated by the Battle Lab through experimentation include insights, impacts, validated requirements, concepts, and leave-behind solutions, as well as changes to doctrine, training, and materiel.

#### **Simulation:**

Leveraging the growth and maturation of computer-based models and simulations, the Battle Lab is expanding the use of its models and simulations beyond the material development and analysis domain to provide sophisticated capabilities to the warfighter. Through innovative techniques, the Battle Lab has developed an interface capability to link existing simulations directly to Army Tactical Command and Control systems, so the warfighter can be directly simulated at the actual workstations in realistic environments. The SMDBL operates two large High Performance Computing Centers located in Huntsville, Alabama, from which to conduct supporting operations; the Advanced Research Center (ARC <http://www.thearc.net/>) and the Simulation Center <http://sc-www.army.mil/> .

#### **Analysis:**

The Battle Lab supports experimentation, conducts analyses in support of material development activities and requirements determination, performs science and technology reviews, assesses advanced concepts, and analytically supports the definition of future space and missile defense architectures.

#### **SMDBL Current Capabilities/Products:**

The SMDBL has an established capability for executing experimentation related to the integration of technology and DOTLMS for space and missile defense experimentation. This capability encompasses all related combat and force development experimentation efforts required to enhance Army capabilities to enable full spectrum dominance. The Battle Lab has successfully used our modeling simulation in various warfighting experiments, CINC exercises, and training events, including Roving Sands, III Corps Warfighter, V Corps BCTP, Prairie Warrior, EUCOM's Joint Project Optic Windmill, Atlantic Command's Joint Task Force Exercise, and

Army's Experiment 5. (POC is LTC Heather Macias, e-mail [maciash@arspace-emh2.army.mil](mailto:maciash@arspace-emh2.army.mil) , phone (917) 554-4222)

Exercise and Training Support is provided to the warfighter through the Synthetic Battlefield Environment (SBE) which was developed and has been successfully proven (UFL, RS, PW, etc.) to provide computer simulation technologies to the warfighter in realistic formats to "train as they will fight". The SBE consists of computer-based models and simulations, simulation to tactical system interface units, and communications and network technologies, linked in a modular environment. The SBE provides the ability to stimulate Army and joint tactical command and control systems with simulations, allowing the warfighter to train on go-to-war equipment. The SBE is also suited for use by the analysis and material development communities, lending an operational validation to off-line simulations. (POC is LTC John Anderson, e-mail [andersonj@smdc.army.mil](mailto:andersonj@smdc.army.mil), phone (256) 955-1775)

The Extended Air Defense Testbed (EADTB <http://www.smdc.army.mil/EADTBA~2.HTML> ) & Extended Air Defense Simulation (EADSIM <http://www.smdc.army.mil/EADSIM.HTML> ) form the core of the many of the SMDBL computer simulations. The user friendly, flexible EADTB offers a high-fidelity modeling capability to operational commanders and combat and materiel developers. EADSIM, used in Desert Storm operations to plan air and air defense campaigns, is a stand alone, low-to-medium fidelity comprehensive air and missile defense simulation that has widespread acceptance throughout the Department of Defense, all three services, and most allied countries. (POC LTC Phil Macklin, e-mail [macklinp@smdc.army.mil](mailto:macklinp@smdc.army.mil), phone (256) 955-4883)

The Synthetic Battlefield Center (SBC) in Huntsville, and Hardware/ Software Integration Center (HSIC) in Colorado Springs are laboratory environments wherein the Battle Lab can conduct experiments, support exercise and training activities, and conduct real-time analysis of software fixes for various tactical platforms prior to taking them to the field. The SBC and HSIC combine the SBE with operational command and control workstations to allow the Battle Lab to provide interactive stimulation to the warfighter through tactical workstations and equipment. (POCs are SBC- Mr. Ed Garcia, e-mail [garciae@smdc.army.mil](mailto:garciae@smdc.army.mil) , phone (256) 955-4361, and HSIC – Mr. Jerry Bendrick, e-mail [bendrickj@arspace-emh2.army.mil](mailto:bendrickj@arspace-emh2.army.mil), phone (719) 544-4207.

The Tactical Simulation Interface Unit (TSIU) is an example of the type equipment that is being developed by the SMDBL. It is an interface device

developed on a Common Hardware Platform (CHP), Sun-based workstation, that interfaces between simulations/simulators (virtual environment) and Army Battle Command Systems (ABCS). Functionally, the TSIU exchanges message traffic from the virtual environment via a variety of simulation protocol data units. The TSIU then determines the destination, format and physical interface requirements and then properly formats and routes the tactical message to the appropriate Command, Control, Communications, Computers and Intelligence (C4I) system (MCS, ASAS, AFATDS, FAADC2I, and Applique/FBCB2). Physical interfaces supported are Ethernet and multiple serial connections. Tactical message formats currently supported include Variable Message Format (VMF), United States Message Text Formats (USTMF), Moving Target Indicator and Position (MTI), Tactical Data Link-B (TADIL-B), FAAD Data Link (FDL), Tactical and Related Applications (TRAP), Secure Communications Data Link (SCDL) and Tactical Information Broadcast Service (TIBS). (POC is Mr. Don Carver, e-mail [carverd@smdc.army.mil](mailto:carverd@smdc.army.mil), phone (256) 955-4361)

The Battle Lab also makes use of geographic information systems to provide solutions to the warfighter's display and visualization needs. STALKER <http://www.smdc.army.mil/stalker.html> is a project developed explicitly to meet warfighter requirements to provide timely geographic area limitation capability that is user friendly and readily adaptable to updated terrain databases. Additionally, the SMDBL has developed a planning tool for Theater Missile Defense (TMD) Operations in a distributed, collaborative environment. The SMDBL has current leading edge application of services that supported this requirement through the compatible mission planning systems (COMPASS). The infrastructure is available for the SMDBL to support the AAMDC. This system will be used by the AAMDC for at least 4 JTFEX's and regularly scheduled training with the SMDBL and Maritime Battle Lab (U.S. Navy). (POC Norven Goddard, e-mail [goddardn@smdc.amry.mil](mailto:goddardn@smdc.amry.mil), phone (256) 955-3327)

The Army Space Exploitation Demonstration Program (ASEDP) <http://www.smdc.army.mil/smdbl/ASEDP/ASEDP.htm>, allows the Space and Missile Defense Battle Lab to leverage the commercial community's space technology advances and has significantly enhanced the Army's warfighting capabilities through space related technologies. Some examples include the Lightweight GPS Receiver (SLGR) employment during ODS. Additionally, the Joint Tactical Ground Station (JTAGS), the Army Space Support Teams (ARSST), and the Army Theater Missile Defense Element

(ATMDE) were all derived through ASEDP. The ASEDP annual process begins with a two page concept paper solicitation to industry, academia, civil, and defense agencies. These concept papers are then evaluated to determine whether or not they meet warfighter needs and would enhance warfighter capability. Those submitting concepts meriting further consideration are then asked to submit a full proposal for a detailed subject matter expert evaluation. Those favorable proposals are negotiated/awarded upon Source Selection Authority approval (which includes funding allocation). The ASEDP receives between 50 and 150 submissions annually, of which 10% are historically awarded and approved. The growth and visibility of ASEDP has been steady and will likely continue well into the 21st Century. (POC Major Frank Cox, e-mail [coxf@arspace-emh2.army.mil](mailto:coxf@arspace-emh2.army.mil), phone (719) 554-8827.)

Another interesting development is the Advanced Research Center Telecommunications Interface Console (ARCTIC <http://www.smdc.army.mil/FactSheets/ARCTIC.html>). The ARCTIC is a rack-n-stack communications interface box consisting of two 128 Mb PC servers and a removable hard drive. Tandem ARCTICs, utilizing common phone lines (minimum of 5 lines) or ISDN lines can approximate throughput of a T1 line at a cost savings of 5 to 7 times. POC Will Kistler, e-mail [kistlerw@smdc.army.mil](mailto:kistlerw@smdc.army.mil), phone (256) 955-1355).

## TRADOC Analysis Center (TRAC)

TRAC continues analyses focusing on Force XXI, Joint/Combined Operations, Systems Modernization, Training, and the Army of the Future beyond the year 2008.

Ongoing Force XXI analyses include the initial drafting of the Division XXI Advanced Warfighting Experiment (DIV XXI AWE) final report and the subsequent culmination of the Joint Venture Capstone Report. TRAC also has assumed the analytical lead in the Army Experimentation Campaign Plan (AECPP) which is a follow-on effort to Force XXI and encompasses FY98-FY08 Army experimentation. The Information Operations Oversight Office (IOOO) Study within TRAC continues to analyze different versions of the OPNET standard models in an attempt to credibly model certain components of IO for future battlefield dominance. Division Design Analysis (DDA) continues work in Phase III with the wargaming of new designs in a variety of theaters and scenarios.

Documentation of Phase IV analysis has already begun. Finally, the CSS Enabler Functional Assessment (CEFA) is investigating, documenting, and analyzing the employment, risks, and personnel impacts of CSS FXXI initiatives.

Future studies within TRAC are highlighted by the Army After Next (AAN) and the Revolution in Analytic Affairs (RAA) studies. As part of AAN, TRAC representatives recently participated in the Space Games at Colorado Springs and are now preparing for the Spring Wargame at Carlisle Barracks. RAA just got off the ground with analysis concerning impacts of changing resources, productivity initiatives, and contract studies characteristics. The focus of the study will concern the changing requirements for analysis and the techniques required for successfully meeting those challenges.

TRAC has the lead for the J6 Sensor to Shooter Study involves wargaming interservice communication timelines with a focus on joint interoperability investments. As part of the Cooperative Polish and United States Dynamic Force Capability Analysis (DFCA) DoD initiative, TRAC is assessing Polish armed forces, doctrine, and systems in conjunction with Polish integration into NATO. Additionally, TRAC is leading analysis efforts in the US/UK Coalition Study, the Joint Surveillance Target Attack Radar System (Joint STARS) Common Ground Station (CGS) Cost and Operational Effectiveness Analysis (COEA) Update, as well as several international scenarios encompassing Joint and Combined warfare operations.

Systems Modernization analyses include the TRACER(UK)/Future Scout and Cavalry System, Follow-on-to TOW, BAT Pre-Planned Product Improvement (P3I) Munitions Analysis of Alternatives (AoA), UAV Requirements Study, Army C4ISR Requirements Analysis, Medium Extended Air Defense System (MEADS), Advanced Precision Kill Weapon System (APKWS), Explosive Standoff Minefield Breacher (ESMB), TRADOC Network Requirements Study, and Battlefield Identification Milestone III. Training issues include the Synthetic Theater of War, the Aviation Combined Arms Tactical Trainer, Military Operations on Urban Terrain (MOUT), and the use of Embedded Training Technologies.

Through its involvement in an increasing myriad of studies and analyses, TRAC continues to fulfill its mission and provide the Army with analytical leadership into the next century.

## TRADOC REINVENTION CENTER

TRADOC continues to pursue reinvention efforts in base operations, as well as in the core competency areas of training, doctrine, and combat developments. Highlights of the program include:

- Waivers (Regulatory and Legislative)
- Army Performance Improvements Criteria (APIC)
- BASOPS Assessment Visits (BAT)
- Capital Ventures
- FAST TRACK
- Marketing

### Waivers:

Since our inception as a reinvention center, TRADOC has processed 280 initiatives, waiver requests, and legislative change proposals (as of 31 March 1998) designed to remove barriers to effective and efficient command operations. We have approved 38 waivers to improve resource posture and quality of life for soldiers/civilians and have approved 72 requests through solutions other than waiver.

### FAST TRACK:

HQDA has created a streamlined processing procedure for reinvention related legislative change proposals. The Reengineering Legislative Working Group, an ad hoc committee under the coordination of the Director of the Army Staff, will review reinvention-related proposals and perform face-to-face coordination with appropriate DoD and non-DoD agencies. The Secretariat and HQDA staff will “champion” reinvention and reengineering initiatives that offer a high payoff for the Army. Successful enactment of legislative proposals depends greatly on strong OMB and OSD support. This new process will help gain that much needed support. The FAST TRACK process will not be used to bypass the standard legislative process, and proposals that do not meet the objectives of reengineering will be returned for processing through the normal legislative system. All TRADOC reinvention related legislative change proposals will be submitted to the Reinvention Center Coordination Office (RCCO) for acceptance and coordination. Proposals that meet the FAST TRACK criteria will be coordinated with the TRADOC SJA and other HQ staff and will be sent to

the TRADOC Commanding General for endorsement and forwarding to HQDA. The RCCO will track the proposal through final outcome.

#### **Marketing:**

A portable display and promotional items are available for marketing purposes. Reinvention is also a part of the TRADOC homepage on the world wide web at <http://www-TRADOC.army.mil/dcsbos/mslpage1.htm>. The reinvention page includes basic information, e-mail links to all reinvention laboratory chiefs, downloadable files like the OPLAN and Reinvention Proposal Form, and the reinvention database with query capability. RCCO POC Melissa Magowan, DSN 680-4323, Commercial 757-727-4323, FAX 757-728-5252, e-mail [magowanm@emh10.monroe.army.mil](mailto:magowanm@emh10.monroe.army.mil).

### **LABORATORIES**

#### **DOCTRINE LAB:**

The Doctrine Lab is working to streamline Army doctrine. As a starting point, the Doctrine Lab is working to reduce 700+ field manuals and joint publications by 20 percent and to reduce the volume of the remaining publications by 20 percent. The lab has processed two waiver requests and one reinvention proposal as of 1 January 1998.

#### **COMBAT DEVELOPMENTS LAB:**

The Combat Developments Lab has implemented a new requirements determination process. TRADOC PAM 71-9 was published 7 Nov 97. It provides the policies and procedures for the Army to use to determine and document requirements for operational forces of the future. The TRADOC PAM revised and consolidated multiple TRADOC regulations and Pamphlets into one comprehensive, streamlined pamphlet. The pamphlet will be revised 6 months after the publishing date, based on the input from the TRADOC schools and other users of the pamphlet.

#### **TRAINING REINVENTION LAB:**

The Training Reinvention Lab completed an Operations Plan and initiated an incentive and marketing plan. The lab has processed 13 waivers of TRADOC, DA and DoD regulations, six legislative change proposals, and two reinvention initiatives as of 1 January 1998. The lab has waived four regulations and has approved four requests through solution other than waiver/legislative change.

#### **MISSION SUPPORT LAB (MSL):**

During FY 96 TRADOC's Deputy Chief of Staff for Base Operations Support (DCSBOS) Mission Support Lab implemented an investment strategy called Base Operations Opportunity Leveraging and Develop-

ment (BOLD) Grants. The intent of the program is to set aside funds to provide venture capital for promising base operations investment opportunities without taxing the limited resources of the TRADOC installations.

The BOLD Grants initiative fully embraces the National Performance Review intent of creating a government that "works better and costs less", and focuses efforts on improved customer service. The program was run in FY 96 during which 30 of 112 submitted initiatives were funded. Initial investment was \$3.5M with an anticipated five year return on investment (ROI) of \$62.9M. ROI to date for all FY 96 funded projects is 1.3M. In FY 97, 59 of 180 submitted initiatives were funded at a cost of \$7.5M. Anticipated 5 yr ROI is \$60.5M. ROI to date for all FY 97 funded projects is \$245.9K. The recently completed FY 98 Program was another success. We received 180 submissions of which 52 were approved for funding. Investment was \$8.2M with anticipated 5 Yr ROI of 31.4M. The FY 99 program will start on 9 Apr 98. Suspense for submission input is 1 Aug 98 and selected projects will be funded in Nov 98.

The MSL also completed a review of TRADOC BASOPS regulations resulting in rescission of approximately 61 percent. Thirty five regulatory provisions have been waived as of 31 March 1998 and 68 requests have been approved through solutions other than waiver/legislative change. TRADOC reinvention efforts will continue to expand, and we are confident our efforts will produce tremendous benefit for TRADOC as well as the rest of the Army. POC is Al Murray, DSN 680-5143, Commercial 757-728-5143, FAX 757-728-5252, e-mail [murraya@monroe.army.mil](mailto:murraya@monroe.army.mil).

## **U.S. Army Cadet Command**

As the end of the current School Year draws near, the central focus of the Command now turns to the operation of the ROTC Summer Camps. Fort Lewis, Washington will once again serve as the site of the ROTC Advanced Camp. A total of twelve regiments composed of ROTC Advanced Course cadets will be trained this summer. The first group of cadets will report to Camp on 6 June 1998. The final group will graduate on 14 August 1998.

For the second consecutive year, the ROTC Advanced Camp will be of 35 days duration. This represents a reduction from the previous length of 42 days. Despite the reduction in length, the underlying principles of the Camp remain the same. Cadets are trained to Army standards, have the opportunity to

develop leadership skills and are carefully evaluated on their potential to serve as commissioned officers.

In addition to training ROTC cadets, the Fort Lewis Camp will also provide training for a regiment of Army National Guard Officer Candidates.

As has been the case for many years, Fort Knox will host the ROTC Basic Camp in 1998. After completing the Camp's rigorous, hands-on training, those individuals will be fully prepared to take their place in the Army ROTC Advanced Course. A total of three Basic Camp training cycles will be conducted in 1998. The first group of cadets will report on 10 June 1998. The last group of individuals will graduate and depart on 4 August 1998.

In order to provide a quality training experience for all Camp participants, it will be necessary to utilize personnel resources from multiple sources. During the 55 days that the Basic Camp will be in operation, a total of 1,522 cadre will provide support. This will include individuals assigned to Cadet Command, as well as USAR, FORSCOM and TRADOC assets. Operation of the Advanced Camp will require a total of 4,690 cadre members. Those individuals will be drawn from Cadet Command, USAR, ARNG, FORSCOM and TRADOC assets.

As previously reported in this publication, Cadet Command is actively exploring new methods of staffing college-level units. Our goal is to validate

methods of returning Active Component personnel to critical Army functions, while continuing to retain Army ROTC programs at a substantial number of academic institutions nationwide. With the commencement of the next School Year, the scope of the test will broaden to include additional units. The RAND Corporation has played a key role in the formulation of this test. At the present time, efforts to identify specific additional units to participate in the test continue.

## ADDITIONAL INFORMATION

COPIES OF THE UPDATE WERE MAILED TO CSA, VCSA, DCSOPS, DCSPER, DCSLOG, ACSIM, DCSI, AND SUPERINTENDENT, U.S. MILITARY ACADEMY, WEST POINT, N.Y. LOCAL REPRODUCTION OF THIS UPDATE IS AUTHORIZED.

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